THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—23RD YEAR. SYDNEY, SATURDAY, FEBRUARY 22, 1936. No. 8.

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A TUBERCULOSIS SURVEY OF A PAPUAN VILLAGE.

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DURING the visit of the first medical expedition of the School of Public Health and Tropical Medicine to Papua, 1935, a tuberculosis survey was conducted in Hanuabada village at the request of His Excellency Sir Hubert Murray, the Lieutenant-Governor of Papua, and with the cooperation of Dr. W. M. Strong, the Principal Medical Officer of Papua.

Objects.

The objects of the survey were twofold, first to locate cases of open pulmonary tuberculosis, and then to endeavour to estimate the extent of the tuberculous infection of the villagers.

Hanuabada Village.

Hanuabada village is in reality a collection of four villages which are gradually becoming welded into one people. The homes are built on piles along the waterfront of Dogu Harbour, which is situated about two miles from Port Moresby, the seat of government of Papua. The gradual increase in population has forced the home builders further out into the harbour, and now in some places the houses are four and five rows deep. All houses not in the front row are connected to the shore by raised pathways. The houses themselves are all about the same size, thirty-five to forty feet long by fifteen to twenty feet wide. The flooring is generally made of sawn timber, and the roof and sides of bundles of grass arranged as a thatch, window spaces being left that are closed at night by timber. In the centre of every house is its fire, built on a clay floor. At night all windows and doors are securely fastened against the "night spirits of evil", but the fire

continues to smoulder, thus producing a perfect incubator. In the houses are stored fishing lines, sails and sailing tackle, yams and other tubers kept for seed, and they act as a kennel for the household mongrel.

Natives: Their Occupations.

These natives originally were agriculturalists, and most of the older people work in their gardens on the banks of the Laloki River. A few are fishermen. Large numbers of the younger generation have found employment amongst the white settlers in Port Moresby as clerks, orderlies and domestic servants.

Educational Contact.

Adjoining the village is the headquarters of the London Missionary Society, which has provided schooling facilities, and about 90% of the children attend school regularly. It is undoubtedly because of the relatively high standard of education that large numbers of the younger generation have found employment as clerks and interpreters in Port Moresby.

Household Arrangements.

The village consists of about 250 houses, and each house is occupied by its owner, but the converse is not true, for every family does not own a house. It is not unusual to find several families occupying one house, for it is the custom for a family without a permanent domicile to wander about amongst their relatives and friends. If a family is broken up by the death of one or both parents, the children are divided amongst the relatives.

The custom of "seeking health" prevails. If a native has been ill for some time, his relatives or friends invite him to spend some time with them and imbibe some of the "good health" of that household, and in this way many a man or woman roams from house to house "seeking health".

Food.

The food of these natives is very varied, but primarily this is supplied by the products of the soil, yams of many varieties, bananas and coconuts, together with the contents of the hunter's bag or the fisherman's net. These are augmented with, or replaced by, the weekly ration of the men who work in Port Moresby. Then again the handy trade store sells relatively large quantities of white bread.

In a general way the natives do not suffer from lack of quantity of food—except towards the end of the dry season and the early weeks of the wet season before the new crops have been developed. In some houses the quality of the food is to be questioned, especially amongst those who do not own gardens, but even these natives obtain native foods by barter. The pig, though seen everywhere, is not eaten regularly, but is retained for marriage payments and as a token of wealth.

Sexual Life.

Polygamy is common, except amongst the strictest church workers. The average village girl is married shortly after the appearance of the secondary sex characters at about fifteen years of age, and many are mothers within a year. It is not uncommon to find a woman of twenty with three children, in fact it would appear that the child-bearing period is over by thirty-five years of age.

The Procedure of the Survey.

The Resident Magistrate at Port Moresby placed the census book at the disposal of the expedition, and the natives were examined in the order of their names in the book. By this means very few were missed.

Native orderlies filled in the name, age *et cetera* of the patient, and then a careful history was taken of past illnesses; the temperature was recorded, and the patient presented himself for physical examination. During the examination attention was paid to general appearance, chest signs, and in children to gland areas and the size of the spleen. After this an intradermal tuberculin test was made. A sputum examination was included for all natives who gave a history of a cough.

The Results of the Survey.

General Statement.

Tuberculosis cases totalled 43; of the affected persons 21 were males and 22 females.

These cases were divided into three groups.

Group A included cases of open pulmonary tuberculosis, diagnosis being confirmed by finding tubercle bacilli in the sputum; there were eight cases, six of the patients being males.

Group B included natives suspected on clinical and epidemiological grounds of suffering from pulmonary tuberculosis; there were 15 cases, six in males and nine in females.

Group C included cases of non-pulmonary tuberculosis. These included cases of acute generalized tuberculosis of infants, and tuberculous lymphadenitis; there were 20 cases, nine of which were in males.

Including infants under one year who were not examined, the population of the village was approximately 2,000, giving a tuberculosis rate of 21·5 per 1,000.

Diagnosis.

In Group A the initial diagnosis was made by detecting tubercle bacilli in the sputum, but in the absence of an X ray plant, the classification had to be made on clinical signs and history. The age-sex distribution and the type of disease are shown in Table I.

TABLE I.

Open Pulmonary Tuberculosis.

Sex.	Age.	Reaction to Mantoux Test.	Clinical Diagnosis.
M.	13	+	Acute pulmonary tuberculosis.
M.	17	++	Acute pulmonary tuberculosis.
F.	25	+++	Acute pulmonary tuberculosis.
M.	26	++	Acute pulmonary tuberculosis.
M.	29	+	Acute pulmonary tuberculosis.
M.	35	++	Subacute pulmonary tuberculosis.
M.	49	+++	Subacute pulmonary tuberculosis.
F.	51	+	Chronic pulmonary tuberculosis.

Those natives placed in Group B were suspected largely because of the history of their households. In these houses a large percentage of children gave strongly positive skin reactions, and frequently the history of the death of a child, or the actual presence of a child with tuberculous lymphadenitis was noted. A search amongst the older members of the household frequently revealed a native in whom the history and chest signs were strongly suggestive of open pulmonary tuberculosis. In two instances cases of tuberculous lymphadenitis were suspected of being, intermittently, cases of open pulmonary tuberculosis.

It should be stressed that not every old person with a cough and chest signs was automatically labelled tuberculous. In fact practically every native over fifty years of age had chest signs, and almost all gave a history of cough.

In making the diagnosis of cases in this group, considerable attention was paid to the tuberculin reactions of the household.

The age-sex distribution of cases in this group is shown in Table II.

TABLE II.

Suspected Cases of Pulmonary Tuberculosis.

Sex.	Age.	Reaction to Tuberculin.	Clinical Diagnosis.
M.	9	+++	Acute pulmonary tuberculosis.
F.	10	+++	Acute pulmonary tuberculosis.
F.	10	+++	Acute pulmonary tuberculosis.
M.	16	++	Acute pulmonary tuberculosis.
M.	22	++++	Lymphadenitis and subacute pulmonary tuberculosis.
F.	38	+	Subacute pulmonary tuberculosis.
F.	42	++	Suppurating adenitis and subacute pulmonary tuberculosis.
F.	40	+++	Chronic pulmonary tuberculosis.
F.	44	+	Chronic pulmonary tuberculosis.
F.	44	++	Chronic pulmonary tuberculosis.
F.	49	++	Chronic pulmonary tuberculosis.
M.	53	+	Chronic pulmonary tuberculosis, ? laryngeal tuberculosis.
F.	55	+	Chronic pulmonary tuberculosis.
M.	55	++	Chronic pulmonary tuberculosis.

In Group C the diagnosis was at times difficult, especially in borderline cases. It was realized that adenitis is common in all children, especially in native children. The distinction had to be drawn between simple adenitis and early tuberculous adenitis.

A standard was finally set at the presence of a definite chain of glands, some of which were becoming fixed, and the history of tuberculous disease in the household. It will be noticed that in six cases the glands had suppurated and healed.

The age-sex distribution is set out in Table III and summarized in Table IV.

The age-sex distribution of all cases is shown in Table V. In this summary Groups A and B have been classified as pulmonary. It will be noticed that there is an unduly high percentage of older people, partly due to cases from Group B. This incidence at older ages is confirmed by the finding of tubercle bacilli in the sputum of a woman aged fifty-one years.

It will be noted that 65% of the non-pulmonary cases occur before the fifteenth year, whereas pulmonary cases are spread over the whole span of years.

TABLE III.

Age and Sex Distribution of Cases of Non-pulmonary Tuberculosis.

Sex.	Age.	Reaction to Tuberculin.	Diagnosis.
M.	2	++	Generalized acute tuberculosis.
M.	7	++	Cervical adenitis.
M.	8	+++	Suppurating cervical adenitis.
M.	8	+++	Suppurating cervical adenitis.
F.	9	+++	Cervical adenitis.
F.	11	++	Suppurating cervical adenitis.
M.	11	+	Tuberculous peritonitis.
F.	13	+	Cervical adenitis with scarring.
M.	14	+++	Cervical adenitis.
F.	14	++	Suppurating cervical adenitis, lupus of outlying skin.
F.	10	+++	Cervical adenitis with extensive scarring.
M.	13	++	Cervical adenitis with scarring.
M.	11	++	Mediastinal adenitis.
F.	17	+++	Cervical adenitis.
F.	17	+++	Cervical adenitis.
F.	20	+++	Cervical adenitis with scarring.
F.	18	+++	Suppurating cervical adenitis.
M.	22	++	Cervical adenitis with scarring.
F.	25	+	Suppurating adenitis of right axilla.
F.	41	++	Cervical adenitis with scarring.

TABLE IV.

Non-pulmonary Tuberculosis.

Type of Lesion.	Number of Cases.
Acute generalized	1
Cervical adenitis	5
Cervical adenitis with sinuses	5
Tuberculous peritonitis	1
Mediastinal adenitis	1
Suppurating adenitis of axilla	1
Cervical adenitis with scarring	6
Total	20

TABLE V.

Age Periods.	Pulmonary.			Non-pulmonary.			Total.
	Male.	Female.	Total.	Male.	Female.	Total.	
0 to 15	2	2	4	8	5	13	17
16 to 30	5	1	6	2	4	6	12
30 to 45	3	5	8	—	1	1	9
45+	2	3	5	—	—	—	5
Total	12	11	23	10	10	20	43

Deaths from Tuberculosis.

For the past two and a half years a record has been kept of the deaths occurring in the village. *Post mortem* examinations are extremely difficult to obtain, consequently diagnosis in every case depends upon clinical findings.

From the register the following data were extracted:

Deaths from pulmonary tuberculosis: Males, 14; females, 10; total, 24.

Deaths from non-pulmonary tuberculosis: Males, 4; females, 10; total, 14.

Total deaths: 38.

This represents an average death rate from tuberculosis of from 14 to 15 *per annum*, or about one-third of the total annual deaths of about 45 from all causes.

The classification of the non-pulmonary deaths is shown in Table VI.

TABLE VI.
Deaths from Non-pulmonary Tuberculosis.

Type of Lesion.	Number of Deaths.	Age.
Acute generalized	2	2
Meningitis	3	8 to 10
Peritonitis	4	6 to 11
Lymphadenitis	4	9 to 17

The age-sex distribution of the deaths is shown in Table VII.

TABLE VII.

Age Periods.	Pulmonary.			Non-pulmonary.			Total.
	Male.	Female.	Total.	Male.	Female.	Total.	
0 to 15	2	2	4	4	9	13	17
16 to 30	5	4	9	—	1	1	10
30 to 45	4	4	8	—	—	—	8
45+	3	—	3	—	—	—	3
Total	14	10	24	4	10	14	38

A comparison of Tables V and VII shows a very close association between the two. Further, unless tuberculosis has increased rapidly during the last year, which the number of deaths does not suggest, once a diagnosis has been made the average expectation of life for cases of pulmonary tuberculosis is a little over two years, and for non-pulmonary cases about four years. Lyle Cummins[1] has shown that two years after diagnosis 32% of all patients with pulmonary tuberculosis in Wales have died. Thus the expectation of life in pulmonary tuberculosis appears in the Papuan to be one-third of that of the European in Wales.

Tuberculin Tests.

Old tuberculin prepared by the Commonwealth Serum Laboratories was used, a test dose of one-tenth of a cubic centimetre of one one-thousandth tuberculin in saline solution *plus* 0·5% phenol being injected into the skin (Mantoux-intradermal). The test was made on the right arm, the control on the left. The injections were made by the same technician throughout the series, and were read by me after forty-eight hours.

To estimate the severity of the reaction the following symbols were used: no reaction (−ve), weakly positive (±), positive (+), *plus* positive (++), and *plus plus* positive (+++). Towards the end of the survey it was decided that any test yielding any reaction at all should be regarded as positive (+), thus eliminating the weakly positive (±) group. In a number of natives the reaction was accompanied by vesication. This at first was considered evidence of intensity of reaction, but later on, superimposed vesication was attributed to variation in the injection technique. If the test fluid was placed amongst the more superficial layers of the epidermis in a strongly positive reaction, vesicles might tend to develop. In the final summary vesication has been disregarded.

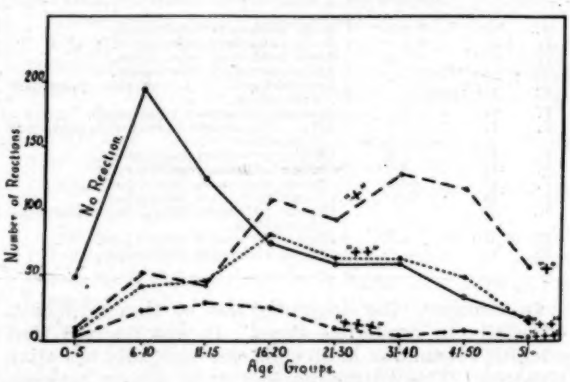
Tuberculin Tests on the Whole Population.—In all 1,756 tests were performed (males 893, females 863). The results are shown in Table VIII and the age distribution in Table IX. (See Graph I.)

TABLE VIII.
Showing Tuberculin Reaction of Population.

Reaction.	Males.	Females.	Total.
+++	39– 4·3%	59– 6·8%	99– 5·0%
++	185–20·7%	174–20·0%	359–20·0%
+	340–38·0%	277–32·0%	617–35·0%
−	329–36·0%	353–41·0%	682–39·0%

TABLE IX.
Showing Age Distribution of Tuberculin Tests.

Age.	No.	−	+	++	+++
0 to 5 ..	117	98–83·0%	9– 7·6%	7– 6·0%	4– 3·0%
6 to 10 ..	308	193–62·0%	51–16·0%	41–13·0%	23– 9·0%
11 to 15 ..	236	123–52·0%	41–17·0%	44–18·0%	28–13·0%
16 to 20 ..	285	74–25·0%	106–37·0%	80–28·0%	25–10·0%
21 to 30 ..	220	57–25·0%	92–41·0%	62–28·0%	9– 6·0%
31 to 40 ..	245	58–24·0%	126–51·0%	58–24·0%	3– 1·0%
41 to 50 ..	201	33–16·0%	115–57·0%	47–24·0%	6– 3·0%
51+	86	16–18·0%	55–63·0%	14–16·0%	1– 2·0%



GRAPH I.
Showing tuberculin reactions of the native population.

Tuberculin Tests in Cases of Tuberculosis.—The results of tuberculin tests in cases of tuberculosis are given in Tables I, II and III. It will be seen that all reactions are positive, ranging in degree from "+" to "+++". Little or no significance could be placed upon this test as an aid to diagnosis of actual disease.

Tuberculin Tests amongst Contacts.—The use of the tuberculin test in contacts was considered to be of extreme importance, and was used as an indicator of household infection. The contacts have been grouped according to the type of case with which they had been associated. These are shown in Tables X and XI.

It will be noted that 90% of the intense reactions occur in the first two decades, and that the tendency of the older members is towards failure to react and weakly positive reactions. Again, it will be

seen that 78% of the children and young adults gave a positive reaction.

TABLE X.

Tuberculin Reactions of Contacts of Open Cases and Suspected Open Cases of Pulmonary Tuberculosis.

Age Periods.	Reaction.			
	+++	++	+	−
0 to 10 ..	6–22·0%	6–22·0%	7–24·0%	9–32·0%
11 to 20 ..	8–25·0%	10–31·0%	10–31·0%	4–12·0%
21 to 30 ..	1– 9·0%	3–25·0%	5–42·0%	3–25·0%
31 to 40 ..		2–13·0%	9–60·0%	4–26·0%
41 to 50 ..		2–33·0%	3–49·0%	1–17·0%
51+			4–80·0%	1–20·0%

TABLE XI.

Tuberculin Reactions of Contacts of Cases of Non-pulmonary Tuberculosis.

Age Periods.	Reaction.			
	+++	++	+	−
0 to 10 ..	1– 4·0%	3–11·0%	2– 8·0%	21–77·0%
11 to 20 ..	3–11·0%	4–14·0%	7–25·0%	13–50·0%
21 to 30 ..	1– 9·0%	2–17·0%	5–38·0%	5–38·0%
31 to 40 ..	2–10·0%	17–80·0%	2–10·0%	

The age incidence and type of reaction differ from those shown in the previous table, the greater number of strongly positive reactions are found amongst the adults, whereas only 37% of the children and young adults (0 to 20) give a positive reaction of any strength.

TABLE XII.

Tuberculin Reactions of Contacts of Deaths from Tuberculosis.

Age Periods.	Reaction.			
	+++	++	+	−
0 to 10 ..	5–13·0%	8–21·0%	8–21·0%	18–46·0%
11 to 20 ..	8–19·0%	14–35·0%	11–26·0%	8–19·0%
21 to 30 ..	1–10·0%	2–20·0%	3–30·0%	4–40·0%
31 to 40 ..	2– 7·0%	9–33·0%	15–55·0%	1– 4·0%
41 to 50 ..		1	1	1
51+		1	5	1

In this group a high percentage of positive reactions occurs throughout the series except in the 0 to 10 age period.

Discussion.

An estimation of the extent of tuberculous infection of the village can be obtained from analysis of four sets of the collected data: the tuberculosis rate, the death rate, the tuberculin reactions, and the type of tuberculosis.

The Tuberculosis Rate.

There were 43 cases out of a population of 2,000, giving a crude rate of 21·5 per 1,000.

In England, medical recruiting commissions during the War estimated that one person in every hundred had pulmonary tuberculosis.[2] In New South Wales the notification of pulmonary tuberculosis was made to apply to the whole State in 1929, and for the year 1933,[3] 1,441 cases were notified from a population of 2,602,037, or 0·55 per 1,000. This figure includes only notified cases, and it is reasonable to assume that a large number of cases are not notified; moreover, non-pulmonary tuberculosis is not notifiable. Nevertheless, it is expected that these cases would not affect the figure to any great extent, as non-pulmonary deaths amount to only 10% of the total deaths from tuberculosis.

In the Sudan, Burrows[4] found 173 cases of tuberculosis in a population of 156,300, giving an incident rate of 1·1 per 1,000. In that survey the diagnosis was made on clinical grounds, and it is quite probable that the true incidence is higher. Wilcocks[5] investigated tuberculosis in Tanganyik and found a crude incidence rate of 8·0 per 1,00c In Zanzibar, amongst 1,452 persons examined, Matthews[6] found 275 cases of tuberculosis; this, when corrected, gave a crude incidence rate of 2·73 per 1,000. The true rate is probably higher, as three-quarters of the patients were men.

Peter Allan[7] conducted an extensive investigation into tuberculosis amongst those native tribes from which labourers are recruited for the Witwatersrand mines. Amongst the Bantu people he estimated that there were 450 cases in a population of 23,000, or an incidence rate of about 19·5 per 1,000.

Deaths from Tuberculosis.

There have been 38 deaths from tuberculosis during the last two and a half years, or an average death rate of 15 *per annum*. The total death rate from all causes in Hanuabada village is 45 to 47 *per annum*. This is to say one-third of the deaths can be attributed to tuberculosis, and thus it is the greatest killer operating in the village.

Table XIII gives the death rate from tuberculosis for the year 1933.

TABLE XIII.

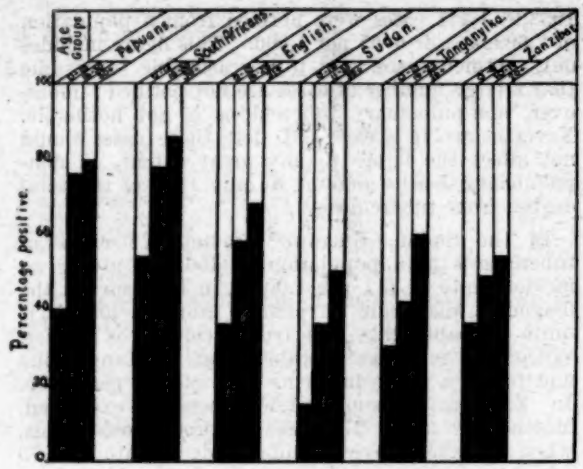
Showing the Death Rate from Tuberculosis for the Year 1933.

Country.	Deaths per 100,000.
England and Wales	106
France	206
Japan	213
Austria	227
New Zealand	62
New South Wales	41
South African native miners	125
Papuan village	700

Tuberculin Reactions.

In Graph II a comparison has been drawn between the tuberculin reactions of the Papuans, South African natives,[7] normal English,[8] natives of the Sudan,[4] Tanganyika,[5] and Zanzibar.[6]

It will be seen that the degree of tuberculization of the Papuans falls a little short of that of the South African natives, is only slightly greater than a normal English population, but is greatly in excess of the degree of tuberculization of natives from the Sudan, Tanganyika and Zanzibar.



GRAPH II.

Showing a comparison between the tuberculin reactions of the Papuans, South African natives, normal English, natives of the Sudan, Tanganyika and Zanzibar.

Type of Tuberculosis.

The South African Institute for Medical Research report upon tuberculosis[7] indicates that there are four dominant types of tuberculosis: (i) generalized septicæmic or infantile; (ii) generalized lymphatic or tuberculosis of school age; (iii) during the latter half of the second decade tuberculosis changes from being typically a general disease to being a local disease—usually pulmonary tuberculosis of the caseating or exudative type and acute rather than chronic; (iv) in middle life tuberculosis continues to be typically a local disease, usually pulmonary tuberculosis of the fibroid or productive type and chronic rather than acute.

Tuberculosis of the South African native was typically of the lymphatic type, and covered the same age period as the young adult phthisis. Moreover, Borrel[9] showed that tuberculosis of the Senegalese was at first essentially generalized, rapidly becoming glandular. Brownlee[10] writes, with reference to young adult phthisis in England: "It is less common in those districts in which there is a large number of deaths from tuberculosis in children." He suggests that "it would seem that tuberculosis in childhood establishes some kind of immunity against phthisis in early life". This undoubtedly is true for the South African native. Amongst the Papuan natives all forms of tuberculosis were found in those examined.

The information surveyed in the above discussion presents very conflicting views. From a review of the types of tuberculosis found in different peoples, it is suggested that the tuberculosis of the New Guinea native approaches more closely to the European type than it does to the native type of Africa. The reasons for this are absent, but several suggestions may be mentioned.

In the first instance the South African native appears to have had contact for many centuries with foreigners, and tuberculosis has been a medically recognized disease amongst the Bantu people for more than a hundred years; on the other hand the Senegalese were virgin soil to the tubercle bacilli. Dr. Strong[11] is of the opinion that tuberculosis has been present in Hanuabada village for fifty years—the duration of white contact. Apparently length of contact with the disease offers little guide to the types found.

The nature of the occupation followed by the various natives suggested a profitable line of inquiry. Both the South African native and the Senegalese were engaged in hard, exacting, totally unaccustomed manual labour. The New Guinea native, if he does find employment, takes up occupations much less exacting and seldom requiring greater muscular effort than those to which he is accustomed. Further the Papuan is never in a hurry to do anything, either muscular or mental. Papua, on that account, has been called the land of "*dohore*" or "wait a while"

It would thus appear that occupation may determine the type of lesions to be found in a native people.

Summary.

1. A tuberculosis survey was conducted in Hanuabada village, Port Moresby, Papua.

2. The tuberculosis rate was found to be 21·5 per 1,000, and the tuberculosis death rate to be 700 per 100,000.

3. From these figures it is obvious that the population of Hanuabada village is markedly affected with tuberculosis.

4. Tuberculin tests showed infection with tuberculosis not as extensive as amongst the South African natives, but much more extensive than in the natives of the Sudan, Tanganyika and Zanzibar.

5. It is suggested that the nature of the occupation determines the types of lesion found amongst a native people.

Acknowledgements.

I desire to express my appreciation of the interest and aid accorded to the expedition by Sir Hubert Murray, Lieutenant-Governor of Papua, Dr. W. M. Strong, Principal Medical Officer, and members of the magisterial staff. Also to Professor Harvey Sutton, for his interest and criticism, and to Mr. K. J. Clinton, biochemist of the School of Public Health and Tropical Medicine, for much valuable technical assistance.

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THE EDUCATIONAL ASPECT OF DEAFNESS.[1]

By HAROLD EARLAM,
Superintendent of the New South Wales Institution for the Deaf, Dumb and Blind, Sydney.

I ESTEEM it a particular privilege to be allowed to come here this evening and to tell you something of the work of the institution I represent as it applies particularly to deaf children. It has been said that deaf children owe most to their doctors and their teachers, and that the association of the doctor and teacher is the greatest hope of the deaf child.

The deaf child presents a peculiarly difficult educational problem. Sound has no meaning to him; and since he lacks the natural stimulus to articulate speech, he remains speechless. He acquires no knowledge of words, has no means of expression but very elemental and indefinite gesture. His knowledge is almost purely sense knowledge. He has no means of receiving or expressing exact thought, or of formulating his thought in exact terms. He has lost speech, has lost language, has lost the intellectual development that the acquisition and use of language alone bring. He comes to school, whatever his physical age, in intellectual infancy, a retarded child. The main avenue for the reception of knowledge and information is blocked—that highly important sense organ the ear is inactive and non-functioning, and this entails variation from the normal mental processes.

May I, with apologies, refer briefly to this physiological aspect.

The study of the normal processes of speech and thought and the study of pathological conditions found in cases of defect have led to the recognition of certain areas of the brain, which are spoken of as centres, and which have certain close relations.

There is a centre for hearing (in the temporal lobe) and a centre for sight (in the occipital); these are the great language-appreciating centres. The centre for touch (on the inner surface of each half of the cerebrum) is also in some circumstances a language-appreciating centre. These language-appreciating centres receive the stimuli from without; they in their turn transmit the impressions received to other centres, the language-producing centres, which control and coordinate the muscles concerned in the production of language. There is a speech centre, and there are manual, writing, and gesture centres; these are the great language-producing centres. Normally, these centres appear to be closely associated in couples; thus the auditory centre appears to be closely related to the speech centre, and the visual centre to the writing centre.

In full-sensed children, impressions are received from the ear by the auditory centre and transmitted to the speech centre, and words are spoken. The motor speech centre is continually being stimulated by impulses which reach it from the auditory centre, and the child learns to reproduce, by the action of the motor speech centre on the muscles of articulation, what has reached the auditory centre from the ear.

[1] Read at a meeting of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association on June 26, 1935.

In the deaf child, since there is no hearing for speech, there can be no reproduction of it in the manner indicated, and dumbness ensues. But the speech centre may be reached through other channels; and when speech and speech reading are taught, the visual centre takes the place of the auditory, and the touch centre is associated.

In the normal child, and apart from education, gesture comes first, then speech. Gesture and speech have been so long practised by our race that both are instinctive, and the impulse to both exists alike in the hearing and the deaf child.

The possible forms of speech are unlimited, those of gesture very narrow. Gesture is simple and universal, but very limited in its power of expression. Speech is not simple, it has developed into conventional language and dialects, many of them to all intent and purpose unconnected. There can therefore be no impulse on the part of the child to express himself in any particular form of speech, only an impulse to express himself by the use of his vocal organs; and it is the work of the teacher to make use of this impulse in the deaf child, and develop it into a recognized form of expression, an understood spoken language. At birth, many processes which throughout life remain under the control of the will are nevertheless so perfectly performed that they are really automatic—breathing, sucking, swallowing. Other processes, which have to be tediously and even painfully learned, become from habit automatic, such as walking, the use of the fingers, *et cetera*. The training of the muscles to speak in conventional language comes in the latter class. Like walking, speech becomes automatic; and until it does so, the attention cannot be given fully to the higher thought process of which speech or writing in some conventional language form is the only means of full expression. Childhood and youth are the periods during which the rapid training of the muscles to automatic use is easiest. Childhood is the period of speech formation. By the time the hearing child is five years of age, speech within the limited vocabulary he requires is automatic.

Not so the deaf child; at five years he has no speech; and as he has not exercised his muscles in speech, thought processes for the development of which speech is so necessary have not evolved, and his brain is relatively stunted. The arrest of development, caused by the absence of hearing, is a permanent loss; for one cannot, before five years, substitute for the speech centre those for writing or finger spelling, and the earliest years of the deaf child are generally lost years.

The advantage of making the earliest use of the speech centre in deaf children will be quite obvious; and recent years have shown increasing effort to bring deaf children under educational influence at the earliest possible age.

I have, I hope, made it clear that the prime penalty imposed on the child by deafness is its inherent effect of retarding mental growth by preventing the acquisition of language in the normal natural manner. There is no inevitable inferiority in mental equipment—the difference between the deaf child and the hearing child is developmental. You will readily

recognize that the whole problem of the education of the deaf is a language problem. Language embraces and embodies everything else; and the extent to which we can develop a full and free and spontaneous use of language is the extent to which we can succeed in our work for the deaf.

The fundamental principles of mind development are those which regulate the mental processes of normal children, and all our work therefore is based on the normal development of the normal child. The normal child hears speech almost from the hour of his birth, but his hearing is not at first with understanding, and consequently there is no imitation. Only by degrees do the organs adapt themselves to their appointed work; only by degrees is language in its real form imitated, and speech (vocal language) is learned almost at the same time as the child is developing his other powers, so that the acquirement of all language is really a part of a general awakening of physical and mental powers. He hears multitudinous sounds and words, and at first understands nothing of their meaning; but one by one these are attached to their corresponding ideas, and with the increase of word forms he develops an increasing rapidity in acquiring others, for language grows on language.

He appreciates only a small proportion of the words he hears—he selects those which first attract him and reproduces them. He hears them many times before he assimilates them. He exerts a natural principle of selection from the bewildering mass of vocal language that reaches his ears.

Experience, the repeated suggestion of voice stimuli, registers these words in his mind with their accompanying ideas. It is only this experience which gives reproductive ability, and which renders language the child's own possession. Experience of its construction, of its idioms, and of its general peculiarities of phrase and term widely applied in representing various subjects, is the only way in which complete concepts can be built up. How far are these features capable of realization in the deaf, who, though intellectually not inferior, have minds more difficult of access? They do not acquire language at the time when physical powers are budding into activity, but at a later period; hence it cannot bear a similar and equal relation to these powers, and there must be modifications in the manner of its development.

They cannot, from their deafness, receive the sensations of language in an aural manner. The senses by which such sensations must be received are not those designed by nature for the purpose; hence to flood language on them in the manner that naturally serves to develop it in hearing children would be to overwhelm and confuse them. The mass of words must be reduced to correspond in some measure with their abnormal condition, so far as the power to recognize or select them is concerned. To some extent the principle of selection must be exercised for deaf children. The nature of language used in teaching must be intelligently chosen to avoid confusion and burdening the memory with meaningless symbols.

The fullest experience is necessary to the facile appreciation and use of language; but the difficulty, rather the impossibility, of equalizing the language experience of the deaf with that of the hearing requires that the issues shall be more clearly defined, the steps of learning more symmetrically and systematically ordered, and the influence of the teacher more intimately exerted, especially during the time that a knowledge of elementary language forms is being acquired. They depend more on tuition; though this must always be conducted with the view to leading the child to discover knowledge for himself, and the fuller influence of accuracy of expression should be admitted. A deeper, clearer insight into the workings of the mind, a deeper sympathy with the child, a closer relation, and a fuller sense of vocation are imperative in the teacher of deaf children.

It is upon the eye that the deaf child is to rely, but little deaf children new to instruction are frequently most unobservant and visually inefficient, largely so because their curiosity has not been aroused by sound stimuli. Cries of fear, joy, warning, all lead the normal child into his quest for knowledge; the deaf miss all these stimuli. They have the visual world before them; but the inner meaning of things, the how and the why, are not brought before them by aided suggestion. Their imagination is not excited; and things are accepted for what they appear to be, not for what they may "contain".

It is of utmost importance with young deaf children that the chief feature of instruction shall be sense training, so combined with language as to interest and arouse the desire for learning. Sense training *plus* language is mental training in its fundamental form; and hand and eye training should accurately describe all teaching to the deaf. Sense limitations demand this to counteract inevitable losses, and sense training must not be reserved for manual training lessons. Even these lose much of their value unless sense training and language permeate the whole educational work of the child.

Knowledge can be obtained only through the medium of the senses connected with its particular form; words have no significance unless they are connected with a previous experience or sensation newly presented. The whole matter of the development of language is of intense interest, but cannot be dealt with here in anything like an adequate manner. But in our language work with the deaf we must conform to the fundamental principles of the development of language. Ideas must precede words. In our earlier work we must have the absolute use of language, actual experience with concrete things. Early words are conventional and restricted, later there comes the metaphorical use—the power and range of meaning are extended; but the final concept is always related to the elementary one.

We begin by associating an idea with a word; and once the recognition that the word represents the thing is obtained, the development of language has begun. Other words are added and gradually a small and limited vocabulary is built up. This is classified into object words, person words, action words, place words, colour words, quality words, number words, and so on; and the next stage is the arrangement of these words in the ordinary language sequence under characteristic headings. We make

no use of grammatical terms; grammar, as such, finds no place in our methods. Older methods were based on grammatical procedure, but this was obviously wrong, and has been abandoned. Grammar is analytical; analysis means resolving a whole into its component parts, which is the exact converse of our work. Instead of grammatical terms we employ word relations. We give the essence of grammar, freed from its technicalities, and follow the correct principle of not introducing grammar until there is sufficient knowledge of language to allow it to be undertaken.

From the simple elementary language work that I have indicated we expand and extend, gradually and steadily adding to the pupil's powers of recognition and expression of language. At no stage do we limit his language work to his powers of reproduction (that would be contrary to the normal language process) nor do we limit him to this constructional and purely synthetical work. At all stages we give him experience in language beyond his power to originate, and strive to make language, as it should be, its own interpreter. Careful and systematic work is necessary to all stages, and care is necessary too to avoid the error of clearly cultivating one style at the expense of another. There are two distinct styles that the pupil must have for a full language equipment, the literary and the colloquial, and both must be provided for. Inability to use common idioms and colloquialisms frequently characterizes the phraseology of the deaf. This is due naturally to lack of real experience in these forms of language. There is always a danger to the teacher of the deaf to restrict phraseology of intercourse to known forms of language—to be too conscious of the limitations of his pupils—and to lose sight of their ultimate possibilities. The deaf require experience alone to equal the hearing in language. The early years of the deaf child's school life constitute a distinctly language period. Other subjects of the ordinary school curriculum must perforce wait until the pupil has a sufficient knowledge of language to receive instruction in them. Geography, history and all literary subjects depend entirely on the power of language, and cannot be attempted before a reasonable command of language has been developed.

Arithmetic, because of the mental training it affords, is one of the most valuable subjects composing the curriculum of a school for the deaf—and we begin at once to develop an appreciation of number. Early work is necessarily practical and concrete. The fundamental processes of addition and subtraction are introduced and proceed concurrently. Recognizing the value of the training in purely abstract forms of arithmetic, the child is led at every stage from the concrete to abstract reasoning, from the things themselves to the element of number apart from the things. But this in no respect differs from the work with ordinary children, and in arithmetic, as in other subjects, the only particular difficulty presented to the deaf is the difficulty of associated language.

Language must permeate the whole of the instruction in all subjects. It is the keynote of all educational work for the deaf; it is the essential difference between the deaf and the hearing.

It would be impossible to trace the procedure of the development of language in the deaf child. I have shown you how we begin, and have shown you how we lay the foundations of the language structure. The rest I must leave to your powers of reasoning and imagination. But when you realize that we must begin by teaching a single word, and on that foundation build up a knowledge of the English language, with all its ramifications, its varying tense forms, its complications and exceptions, its difficulties, the various meanings and shades of meaning it attaches to identical words, you will realize something of the immensity of the task.

Physical culture work is an essential feature in a school for the deaf, many of whose pupils are by reason of the condition that has caused the deafness, or by the limitation of the ordinary physical experiences of childhood, constitutionally enfeebled or inferior. Our general health routine, of which physical culture work is a part, is based on sound modern principles, and has proved its efficiency by its success. Our honorary medical staff, which includes medical ceoffirs, ear, nose and throat and ophthalmic surgeons, consultant physician and medical inspector, who annually submits all children to a thorough overhaul, does splendid work.

Physical culture work follows ordinary modern procedure, and is markedly successful.

Both our boys and girls participate in school sports under the auspices of the Public Schools' Amateur Athletic Association, and demonstrate their ability to meet their hearing brothers and sisters on even terms, to play the game for the sake of the game, and to win or lose with a smile. At the moment, our boys are the holders of a football championship and our girls of a life-saving pennant.

Manual instruction again is of essential importance, and is a necessary part of instruction during the deaf child's whole school career, and drawing is intimately associated with it. Drawing has its particular values in a school for the deaf as a means of expression before the ordinary language expression has been developed, as an aid to language, as well as for the influence it exerts on the æsthetic faculties of the mind. There is nothing to prevent the deaf reaching the highest point of perfection in art or in manual dexterity, and in these matters their education follows a normal course and produces a normal result. Instruction in manual and drawing subjects must include special language instruction. "Every subject must teach its own language" must be a slogan to the teacher of the deaf. Every subject has its own special, or technical, or characteristic language; and the only way in which it can be taught is by and through the subject itself.

We have a complete course of hand and eye training in our deaf school, which branches off in the case of the girls to distinctly feminine occupations and domestic arts, and in the case of the boys to woodworking and other activities. We do not attempt technical or industrial training, although, in the case of both boys and girls, manual training has developed a distinct vocational value; and without sacrificing any educational principle or interest, the vocational value is never lost sight of.

The future of our deaf pupils, given a reasonable period of instruction, is an assured one. The whole trend of our work is to develop a sound physique, a well coordinated muscular system, a good command of ordinary language, and a healthy and normal attitude; and in spite of all our difficulties and obstacles, I know of no school for the deaf which turns out a healthier or more normal type. I mention this in no egotistical spirit. What we do is done under very imperfect conditions; and I mention the success achieved as a suggestion to you of what the efforts that produce it would be capable of producing under more perfect conditions. A wide industrial field is open to our adolescent deaf; they take their places in the outside world, and in the vast majority of cases hold their own well, and become entirely good citizens.

I have been speaking of the education of the deaf; but I have not yet referred to methods, and designedly so, because in this respect the method is frequently looked upon as the end, and not as the means. There are two main methods of imparting instruction to deaf children, the oral method and the silent method. In the former, speech and speech reading are employed, in the latter the manual alphabet; writing is common to both. The choice of method for individual children is decided on considerations of age, condition and capability.

The oral method seeks to give the child an intelligible speech and the ability to read the language of everyday life from its visual indications. In the silent method the letters of the alphabet are taught on the fingers, and finger spelling becomes the mode of intercourse.

The aims under both methods are similar, the only difference being that under the silent method speech and speech reading are not attempted, and the manual alphabet takes their place. There is more in common between the two methods than might be supposed from superficial consideration. Both demand a visual and tactile recognition and memory; they are similar in the psychological conditions necessary to their success. The difference is in detail, not fundamental; the elements of both are essentially "signs" for what is represented vocally to the hearing child. The same principles of teaching and recognition are essential for efficiency in either method; and, but for the difference in detail in the means used, there is no necessary important variation, either in the procedure of teaching or in the excellence of results achieved, in the expansion and development of thought.

The oral method is more generally followed, which indicates the opinion in which it is held by the majority of those responsible for the education of the deaf as the agent of intellectual unfolding. Much controversy has raged between the exponents of the two methods. I content myself by saying that in my judgement the oral method is that indicated as the better for the majority of deaf children.

My remarks on the nature and procedure of oral instruction must necessarily be brief. It consists of two elements—speech by the child and speech to the child—the former a touch, and the latter a sight element. Speech reading is the greater element of oral teaching, inasmuch as success in every line of study is dependent on it.

Only about half the sounds used in speech are directly visible; and it is impossible to secure conscious recognition of every sound in speech. It therefore follows that speech reading depends more on intelligence than on mechanical observations. The visual differences between allied or related sounds are so minor as to be almost entirely unobservable in actual speech; and for twenty-one consonantal sounds there are only ten definite facial positions. Obviously something beyond mechanical observation is required for the recognition of associated sounds.

Our task is to classify and arrange the sounds of our language in the most suitable manner, develop their production, and develop their recognition, in speech.

The teaching of speech is a very delicate and expert work. It calls for a complete knowledge of the mechanism of speech, which consists of four essential parts: motive, vibratory, articulatory, resonating, and it is essential that the teacher should have a thorough knowledge of the construction and functions of every part of the speech mechanism, not only for the proper training of the pupils in speech production, but also for correct diagnosis and correction of error.

The order followed in speech-producing work is naturally the order of increasing difficulty. The most readily observed and easily imitated sounds come first, and are followed by those not so readily observed or imitated, and of less simple mechanism.

To develop the exact use of the articulatory organs in the formation of speech is the most difficult part of speech teaching to the deaf. The smallest error in placement, position or release, affects the quality of the sound produced, and the teacher requires a precise knowledge of the organic position and movements of every sound in speech.

All articulatory action takes place well forward in the mouth. The whole area in which organic action can operate is very limited in extent, and fine adjustments are necessary. Exaggerated action must be avoided—it leads to a clumsy use of the organs and to laboured, unnatural and unintelligible speech.

The value of vowel sounds is not constant, but varies in the speech of different people; but these variations do not seriously affect intelligibility. It is not so with consonantal sounds; they must be given their essential value, must have position and placement of organs, movement, and breath or voice flow.

While the development of speech and speech reading proceed concurrently, it must be remembered that they are essentially different, that speech is a language of touch and speech reading a language of sight, that the child's speech is a recognition and memory of touch images and his speech reading a recognition and memory of visual images; and that while these are coordinated by association, they are essentially different sensorily and cerebrally.

In the simplest utterances, the speech principle is also the speech reading principle; that is to say, the sound is recognized by direct observation of the muscular action of production.

In others, direct observation of the muscular action is impossible; and the sound must be read from secondary or incidental indications. Thus "P", "F", "TH" are read from direct observation. "S", elevation of tongue surface to gum, is read from its effect on mouth angles. "SH", elevation of tongue to palate, is read from protrusion of lips. "K", elevation of more backward part of tongue to palate, has no definite speech reading indications.

Then again, the actual differences between such associated sounds as "P", "B", "M"; "T", "D", "N"; "K", "G", "NG" are so minor in actual speech as to be quite impossible of detection as a mechanical operation, and in ordinary speech the actual value of sounds is affected by context, that is by preceding or succeeding sounds.

All this indicates that speech reading as a mechanical operation can never be an efficient means of speech recognition, but must, if real success is to be attained, be an exercise of the intelligence as well as of the visual faculty.

The deaf can and do develop an intelligible speech, and ability to read speech from its visual indications. Their speech can never become the perfect speech of the hearing person. Modulation and inflection, the light and shade that impart so much of the real beauty of speech, are governed entirely by the ear; and with an inactive ear cannot be developed to any real extent. This accounts for the monotony so frequently noticed as characteristic of the speech of the deaf.

But let me once again emphasize the fact that speech and speech reading are not the essence of the education of the deaf. They are purely the means to the end—the means of intercourse and instruction to the end of language and intellectual competence.

Partial Deafness.

One of the recent developments in the work of the education of the deaf has been the considerably greater attention given to children suffering from partial deafness.

There are two classes of deaf children: (*a*) adventitiously deaf children with naturally acquired speech, (*b*) partially deaf children capable of receiving aural instruction, who stand in an entirely different relation to education from the born deaf and totally deaf child.

They have distinctive needs, and although these distinctive needs cannot be adequately met in ordinary schools for the deaf, yet until comparatively recently the only provision for such children has been the ordinary school for the deaf. They require the help of the specially trained and qualified teacher of the deaf, but they should never be in a deaf environment.

The adventitiously deaf child requires the preservation and probably the improvement of his naturally acquired speech, and the transference of its recognition from the ear to the eye. He has the ordinary language equipment of the ordinary child, and is generally out of place in a class of deaf-born children; he requires the normal environment of speech and association with ordinary hearing-speaking children.

The partially deaf child needs the constant stimulus of speech, and should be in a normal speech-language environment. He requires special attention to prevent the deterioration and to promote the improvement and efficiency of his speech, and he requires instruction in lip reading to improve his receptiveness for speech and language.

Attempts have been made in particular schools and areas to meet the special requirements of these two classes of children, and the outstanding result of these efforts has been the realization of the magnitude of the problem and of the obvious requirement of a scientific classification of deaf children according to their hearing power or history and their intellectual status, and such grouping in special schools or classes as will fully meet the necessities of the separate or different types of children.

The problem is one vastly greater than that affecting the adventitiously or partially deaf children in our schools for the deaf. It concerns all partially deaf children, and it is being realized that partial deafness is a far more frequent condition than was imagined, and that it presents a problem of first magnitude.

Even allowing for American enthusiasm, we cannot fail to be startled by a recent assertion that there are three million children suffering from hearing defects in the United States of America.

I shall not attempt to analyse this figure, or make any comment on it, but shall turn to the report of the late Dr. A. Eichholz on his study of the deaf of England and Wales, 1930-1932. He tells us that in 1930 there were 689 partially deaf children in certified schools for the deaf; but that in the same year school medical officers had reported 1,882 such children to the Medical Department of the Board of Education. In the absence of scientific and expert testing, it must be obvious that the figures for England and Wales were very incomplete; but even so, they reveal a serious weakness, and indicate: (i) that there should be a definite standard test of hearing power, and more careful and precise medical examination; (ii) that since it must be recognized that there are in ordinary schools a considerable number of children who require the special help indicated for partially deaf children, provision should be made for the establishment of schools or classes under such conditions as will make reasonable educational classification possible.

A further point, and one of essential importance, is that in Dr. Eichholz's own words: "Effective steps should be taken to provide comprehensive measures for the otological supervision and treatment of all partially deaf children during their school life." Work already being done shows how urgent is its necessity, and what extremely valuable results can be secured.

Its urgency is undeniable. As pointed out in *The British Medical Journal* some months ago:

> There is one fact of outstanding importance which must be borne in mind—namely that certain conditions of disease arising in early childhood are commonly associated with very minor impairment of hearing function in one or both ears, and that in later life not only may deafness of severe degree develop, but serious injury to health will result if disease in its early stages is left untreated.

The point for emphasis is that evidence that has accumulated during the past few years proves that in a very large proportion of cases minor defects of hearing are among the earliest detectable signs of the existence of pathological conditions which may, and in fact often do, remain unnoticed unless attention is drawn to them by refined methods of testing hearing and assessing the hearing acuity of each ear in relation to some recognized physiological range or standard of normality.

Recognizing this, various authorities have adopted a very complete form of medical inspection, which has brought the recognition of the importance of ear examinations, and this has led to the establishment of provision for tonsil and adenoid operations, ear operations, aural treatment and ionization.

The effects of a routine of this nature show up remarkably.

In the London County Council area, where such a scheme is in operation, the number of children in attendance at schools for the deaf has fallen extraordinarily. Between 1923 and 1930 the numbers fell from 723 to 560—a diminution of 22%, or from one school child in 840 to one in 945.

In the County of Middlesex, between 1920 and 1929, the number of cases of middle ear disease in children fell from 641 to 347, and the percentage of the number of children examined from 2·7 to 1·2.

For three years the school medical authorities of Tottenham have followed a scheme for attacking the problem of defective hearing in both its medical and educational aspects. The scheme may be summarized:

1. Detection of cases and measurement of defects by audiometer tests.
2. Medical examination and diagnosis.
3. Medical or surgical treatment.
4. Retesting of each child by audiometer to assess the effects of treatment.
5. Decision by medical and educational authorities in regard to the subsequent care of the child.

Results have been most encouraging. It has been proved to be both possible and practicable not only successfully to treat a very large proportion of cases of early disease, but to restore hearing to normal in many instances, even of those children in whom the defects were severe.

I do not think any argument beyond that embodied in these facts is necessary to establish the urgency, the humanity, and the economy of efficient medical inspection and the institution of remedial and preventive machinery.

It is not enough for medical inspection to discover the children who require special aid as partially deaf children and bring them to school; it will fail in a most essential aspect if it does not also lead to their correct medical oversight and treatment.

I may say here that my references to partially deaf children are based to a certain extent on portion of a paper I was privileged to submit to a particularly successful first conference of teachers of the deaf held in Melbourne this year. The proceedings of this conference are now in the hands of the printer, and as they contain matter of very definite interest to you in the particular branch of medical science you pursue, I commend them to you for your perusal and consideration.

Hearing Aid Apparatus.

Another of the recent developments in the work of the education of deaf children has been in the direction of employing hearing aid apparatus in schools for the deaf consequent on recent development and refinement of hearing aids. A great deal of interesting and valuable experimental work is in progress, notably at the Department of the Education of the Deaf at the University of Manchester.

The work is so essentially experimental that it is not possible to say much at the moment, the lines along which it is being directed being: (i) detection and measurement of hearing capacity, (ii) design and construction of hearing aid apparatus, (iii) development of sound principles and method for the use of this apparatus.

Hearing tests are: (i) audiometer 2A or 2B tests; (ii) human voice under controlled conditions, to discover and record the maximum distances at which vowel sounds, "AR", "OO", "EE", and consonant sounds, "SH", "S", can be (*a*) heard as a sound, (*b*) distinguished one from another.

Two points that appear to be established are:

1. Hearing aid apparatus can never take the place of lip reading. The combination of hearing aid and lip reading has led to the achievement of striking success, and is indicated as the most promising line of effort.

2. Hearing aid apparatus intended for the use of children with partial or residual hearing may be useless or worse than useless in the hands of the teacher unless he is trained to apply it efficiently.

The particular apparatus that appears to have found most favour in England is Poliakoff's "Multitone", which has been adopted for use in the London County Council's schools and in some provincial schools, and it will shortly, I hope, be in experimental use in our own school in Sydney. The claims made for it are probably exaggerated, but the inquiries I have made have assured me that it is possibly the best instrument of its nature available at the moment.

Prevention of Deafness.

It is certainly a fact that great progress has been and is being made in the direction of the extinction of acquired deafness, progress for which all credit must be given to the devoted work of the members of your profession, and to the better opportunities provided for the exercise of your knowledge and skill by modern health authorities.

The effect of modern methods of notification and treatment of the infectious diseases which carry the danger of deafness in their train has been very marked.

Formerly, children in schools for the deaf were almost equally composed of congenital and acquired cases of deafness, whereas now the proportion of congenital to acquired cases is steadily increasing, and the decrease in the total number of children under tuition is due definitely to the lesser number of cases of acquired deafness.

The number of children under tuition in schools for the deaf in England were: 1930, 3,951; 1931, 3,841; 1932, 3,735; and there was a further decrease in 1933, and this notwithstanding intensified efforts to secure the attendance of the children who require the help of special schools.

But is anything being done towards the lessening of congenital deafness? Most of the children now admitted to schools for the deaf are congenitally deaf. In a few cases, but not many, deafness may be due to congenital syphilis, but nearly all are the children of parents who are non-syphilitic and who can hear.

What is the explanation? Kerr Love, of Glasgow, has for years been preaching Mendelism as the explanation, but describes himself as still "a voice crying".

Fay's monumental work, based on the histories of some 4,000 deaf marriages in America, establishes certain general principles, and shows that it is not so much the immediate parentage of the child that determines his deafness, but that the possession of deaf relatives determines his liability to deafness.

In marriages where both partners are congenitally deaf and where both have deaf relatives, the proportion of them having deaf offspring (28·4%) and the proportion of deaf-born children (30·3%) are very high.

The possession of deaf relatives would appear to be a trustworthy indication of liability to deaf offspring. A person deaf congenitally or adventitiously, having deaf relatives, is liable, however married, to have deaf offspring, the liability being much greater in the case of the congenital than in that of the adventitious.

To me the position appears to be rather hopeless. While it is outrageously absurd to allow deaf-mutism to continue and to progress without very definite effort to control and eventually to eliminate it, nothing much appears to be done. We must not talk of sterilization; we may try to train the public to realize some of the facts of the causation of congenital deafness, and of the dangers of the intermarriage of the congenitally deaf and of the marriage of relatives of congenitally deaf people into similar families to their own. We may try to develop some public conscience on these matters, but I fear that public conscience has little effect in diverting or limiting personal desires.

THE TREATMENT OF FAMILIAL ACHOLURIC JAUNDICE.[1]

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FAMILIAL acholuric jaundice, first described by Minkowski in 1900, is now recognized to be of widespread, though not of common, occurrence. Its peculiar characteristics have attracted an amount of attention in medical literature which the relative infrequency of its incidence scarcely justifies. Comprehensive reviews by Tileston,[1] Dawson,[2] and Cheney and Cheney,[3] amongst others, have made the general features of the disease well known. The pathogenesis, however, remains obscure in spite of Haden's[4] illuminating work on the fundamental abnormality of the erythrocyte. These aspects of the subject will not, therefore, be dealt with in this paper, which will confine itself to a brief review of the results of splenectomy and a discussion of some problems of treatment about which general agreement has not yet been reached.

The Clinical Material.

Familial acholuric jaundice appears to be of comparatively common occurrence in Victoria; during the past fifteen years I have seen thirty-three patients suffering from the disease. Seventeen of the cases have occurred amongst the members of the Hazel family, which has already been the subject of several communications. Springthorpe[5] in 1904 described the clinical features presented by six of its affected members, on two of whom splenectomy had been successfully performed by Stirling. In 1908 he[6] recorded the subsequent history of these patients and drew attention to the lasting benefit which had followed removal of the spleen. Unfortunately, Springthorpe used the term "splenic anæmia" in describing his cases; this error in nomenclature has prevented his pioneer work from receiving the recognition it deserves. In 1922 I[7] brought the details of the family history as far as possible up to date. Since then some additional information has been obtained, and this is incorporated in the family tree shown in Figure I. Clinical evidence sufficient for diagnosis has been obtained in thirty-four individuals; of twenty-six who have been examined by me, seventeen have been shown to present the typical features of acholuric jaundice, and ten of them have been treated by splenectomy. In addition, sixteen other patients suffering from familial acholuric jaundice, representing eight affected families, have come under my care in private practice and ten of them have had their spleens removed. The series of personally observed cases on which this paper is based consists, then, of thirty-three patients, twenty of whom have been subjected to splenectomy.

Results of Splenectomy.

The results of splenectomy in this series bear out the generally accepted view that the operation brings about complete and lasting freedom from symptoms. One point which has not been sufficiently emphasized in the literature is the rapidity with which the more seriously affected patients improve after the operation. The jaundice disappears almost immediately, and the anæmia improves so rapidly that within six weeks a bedridden child may be well enough to return to school. Because of the dramatic nature of the improvement, preoperative transfusion is seldom needed, and splenectomy may be undertaken without hesitation even in patients who appear almost desperately ill.

The operative mortality is very small. In this series no deaths have occurred from causes in any

[1] Read before the Section of Medicine at the annual meeting of the British Medical Association, Melbourne, September, 1935.

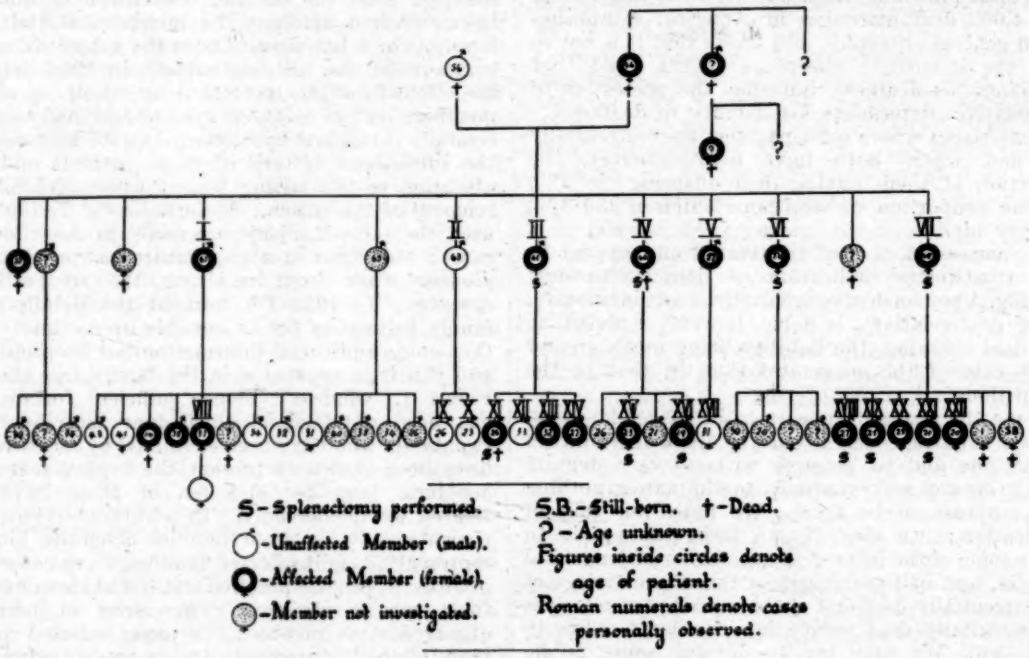
way related to the operation. Two patients have died; one from pulmonary tuberculosis, three years after splenectomy, and one from lobar pneumonia, eighteen years after splenectomy. Experience in other parts of the world also shows that the risks of operation are very small. Pemberton[8] reports from the Mayo Clinic 118 cases with four deaths in hospital, Vaughan[9] nine cases with one death, Herfarth[10] 176 with six deaths, and Beckman and Jäderholm[11] 18 with no primary mortality.

Operative morbidity also has in this series been negligible. One child, aged ten years, and one adult of forty-two years of age, developed purulent effusions in the left pleural cavity; both recovered rapidly after aspiration. The technical difficulties imposed by the presence of gall-stones will be referred to later. In several instances amongst the adult patients dense perisplenic adhesions have rendered the operation tedious and prolonged. But in general, it may be said that few of the cases have given rise to any real anxiety.

The remote results of splenectomy have been equally satisfactory. Of the two patients operated on by Stirling in 1904, one bore four children and remained free from symptoms for eighteen years until her death from lobar pneumonia, and the other, who has had seven children, is still in good health. All the other patients who have been surgically treated have now remained well for a period sufficiently long to bear out the general statement that the relief afforded by splenectomy is permanent.

The Indications for Splenectomy.

It is generally agreed that the administration of liver or iron and the use of X rays or radium have little or no effect on acholuric jaundice. The management of the individual case turns, therefore, on whether the spleen should be removed, and if so, at what stage it should be done. Despite the successful results of the operation, there are differences of opinion about the indications for its performance. Influenced, no doubt, by Chauffard's early dictum that patients suffering from the familial type of acholuric jaundice are more jaundiced than sick, most authorities state that splenectomy should not be advised unless the symptoms are sufficiently severe to cause definite incapacity. This attitude is justified by the fact that the disease, even if it is untreated, is often compatible with long and useful life. On the other hand, the occasional occurrence of severe and sometimes fatal hæmolytic crises, which may occur quite unexpectedly, and the greater difficulty and danger of the operation in older patients, support the opposing view that splenectomy should never be long delayed once the diagnosis has been made. This divergence of opinion is doubtless due to the occurrence of wide variations in the severity of familial acholuric jaundice. It is, however, not sufficiently recognized that generally speaking the disease follows much the same course in the individual members of each affected family. In other words, the variations in severity are familial rather than individual. In the Hazel family, for instance, although the disease has caused much incapacity and invalidism amongst its members, not one has actually died of its effects, and I have therefore felt justified in advising splenectomy only when the symptoms have become sufficiently severe to interfere with the patient's economic and social activities.



In other families acholuric jaundice occurs in a much graver form, as the following case history shows.

N.B., a female, aged sixteen years, was the only survivor of a small family. Her father had been accidentally killed. Her mother had died at thirty-one and her only brother at sixteen years of age from severe anæmia which had been regarded as pernicious in type. When I saw her in 1922 she presented the classical features of acholuric jaundice in severe form, and there can be no doubt that it was this disease which caused the deaths of her mother and brother. She was grossly jaundiced. Increased fragility of the red cells was present, hæmolysis commencing in 0·525% saline solution (normal control 0·425%). The blood findings were:

Erythrocytes per cubic millimetre	2,190,000
Hæmoglobin value	35% (Sahli)
Leucocytes per cubic millimetre	10,300

The film showed gross microcytosis; polychromatic cells, very numerous and of intense blueness; many normoblasts and an occasional myelocyte were seen.

Splenectomy was advised and preoperative preparation by transfusion was deemed unnecessary. Mr. Alan Newton removed at the one operation the spleen and a chronically inflamed gall-bladder containing six pigment stones. Convalescence was rapid and uneventful, and the patient has since enjoyed good health.

In this case the prognostic significance of the family history afforded an indication for splenectomy which could not be disregarded. Dawson[2] has described a similar patient, "B. Tope", who was less ill than my patient, but whose family history was equally ominous. Of her he remarks: "Can there be any doubt that this child, however well she appears, should have her spleen removed?" With this attitude I heartily concur, and I would urge that in every case of familial acholuric jaundice the family history as well as the patient's general health should be considered in arriving at a decision for or against splenectomy.

Treatment of Associated Pigment Stones.

In seven of the twenty patients treated surgically in this series pigment gall-stones have been found, but in only one of them had a mistaken diagnosis led to a previous operation on the biliary tract. These figures are lower than those recorded by other observers. For instance, Pemberton[8] reports that 68·6% of patients at the Mayo Clinic showed conclusive evidence of disease of the gall-bladder, with and without stones, and that 20% had previously been subjected to operation on the biliary tract, presumably without knowledge of the presence of the primary disease. Vaughan[9] found stones present in six of seven patients whose gall-bladders she examined. It would seem that pigment stones occur more frequently than my own figures indicate.

There is, as yet, no general agreement about the best method of dealing with these stones. Vaughan perhaps expresses the accepted view when she writes: "At the time of operation it is essential to remember the frequence of gall-stones, and if possible to remove the gall-bladder at the same time." This attitude appears illogical. The biliary stones are not due to primary disease of the gall-bladder; if cholecystitis is present, as in the case cited above, it must be regarded either as an accidental complication or, possibly, as the result of long-continued irritation by pigment stones. The formation of stones results from the deposition of portion of the large amount of pigment with which the liver cells are called on to deal. If excessive hæmolysis is terminated by splenectomy, the gall-bladder has only to be emptied, not removed, and recurrence of stones need not be feared. The correctness of this attitude is supported by the results obtained in my own cases.

In three patients operated on more than ten years ago, cholecystotomy and removal of stones were done at the same time as splenectomy; in none of them has any evidence of biliary disease since manifested itself.

In another patient, a boy of twelve years of age, Mr. Newton contented himself with crushing the friable stones digitally without opening the gall-bladder; there has been no recurrence.

The last patient, a man aged sixty, is the only one of this series who had previously been operated on for gall-stones; cholecystotomy had been performed twelve years before by another surgeon, and a number of stones had been removed. When Mr. Newton reopened the abdomen he felt a large pigment stone in the gall-bladder. After he had removed the spleen he opened the gall-bladder, only to find that the stone had disappeared; doubtless it had been crushed during the manipulation of the viscus. The incision in the gall-bladder was closed with a purse-string suture. This was five and a half years ago, and there has been no recurrence.

Practical experience therefore supports the conclusion reached on theoretical grounds that the proper treatment of the pigment stones so often encountered in familial acholuric jaundice is by splenectomy and by simple emptying of the gall-bladder. This can usually be accomplished by crushing the stones digitally, but cholecystotomy may be necessary. The gall-bladder should be removed only if definite evidence of cholecystitis is present.

Summary.

The results of splenectomy in twenty patients suffering from familial acholuric jaundice are briefly reviewed. There has been no operative mortality, and the operative morbidity has been negligible.

Variations in the severity of the disease are familial rather than individual. The family history, as well as the clinical findings in the individual patient, should be considered in determining the advisability of splenectomy.

When biliary pigment stones are present, the gall-bladder should be emptied by crushing the stones digitally or by cholecystotomy. Cholecystectomy should be performed only when evidence of cholecystitis is present.

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BRUCELLA INFECTIONS: THE FREQUENCY OF AGGLUTININS FOR BRUCELLA ABORTUS IN THE POPULATION AT LARGE.

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IN recent years it has become apparent that cases of human infection with *Brucella abortus* (*Bacillus abortus* Bang) are more common than has been generally recognized. From 1923 onwards numerous writers have reported cases from various parts of the world and, within the last few years, infections due to this organism have been observed in this country. It seems unlikely that this type of infection has only just manifested itself within the past ten or fifteen years and the most probable explanations of the failure to recognize these cases are, firstly, that the symptoms are usually milder than those of typical undulant fever and not so characteristic, and, secondly, it is not generally recognized that this organism is pathogenic for man under ordinary conditions.

As a satisfactory diagnosis can be made only by bacteriological and serological means, it has become the practce in this laboratory to examine for the presence of agglutinins to *Brucella* all sera submitted for agglutination reactions.

With the adoption of this practice it became necessary to determine the frequency of brucellar agglutinins among the population at large. Such observations have been made in England, Sweden and America, and indicate that titres up to 1:160 may be found in the complete absence of any history of undulant fever, while titres up to 1:10 or even 1:20 are quite common.

Harrison and Wilson (1928), in an examination of 998 sera which had been sent in for submission to the Wassermann test, found that 5·41% of them agglutinated *Brucella abortus* to a titre of 1:10 or higher, while 0·70% agglutinated this organism to a titre of 1:80. Titres over 1:80 were very uncommon.

Similar results were recorded by Martin and Meyers (1931) in America and by Olin (1931) at Stockholm.

With the object of obtaining corresponding information for use in interpreting the results obtained in serological examinations of suspected cases from this locality, the following examinations were made.

Experimental Work.

The antigen used was prepared from a strain of *Brucella abortus*, No. 1A, obtained from the Commonwealth Serum Laboratories. This strain was "smooth" according to the usual criteria laid down for this group of organisms. A number of Roux bottles of liver extract agar were seeded with a young culture of this organism, and after forty-eight hours' incubation at 37° C. the growth was washed off in saline solution and killed by heating to 55° C. for one hour. The organisms were then thrown down by centrifugation and resuspended in normal saline solution to which phenol had been added to make a 0·3% solution. This was stored as a thick suspension and diluted when required to match a $1{,}000 \times 10^6$ *Bacterium typhosum* opacity standard.

Equal volumes of sera, diluted from 1:5 to 1:40, and of bacterial suspension were incubated in Dreyer tubes in a water bath at 55° C. for eighteen hours, when readings were made. When agglutination occurred in all serum dilutions, a second test was made, a greater range of dilutions of the serum being used. In all cases an end titre was determined.

By this means 396 sera were examined. These had been sent in for Wassermann tests, and may be taken as coming from a random sample of the population. The majority came from persons who live and work in the city of Adelaide or its environs.

In Table I are recorded the number of sera which agglutinated *Brucella abortus* to the titres indicated. It will be noticed that titres over 1:20 are uncommon.

TABLE I.
Showing Titre of Reacting Sera.

Titre.	Number of Sera Reacting.	Percentage of Total Sera Examined.	Percentage of Total Positive Reactors.
1/10	7	1·77	35
1/20	6	1·52	30
1/40	3	0·76	15
1/80	2	0·51	10
1/160	—	—	—
1/320	—	—	—
1/640	1	0·25	5
1/1,280	1	0·25	5

These results indicate that 5·05% of persons may be expected to have agglutinins for *Brucella abortus* in their blood, and that occasionally one may find persons who, in the absence of any illness, agglutinate this organism to a relatively high titre.

Since the practice of examining all sera sent in from cases of pyrexia of unknown origin for agglutinins to *Brucella abortus* was adopted, nineteen sera have been tested. Two gave positive reactions. One reacted to a titre of 1:10,240. The other reacted to 1:320, but on a second examination twenty-three days later the titre had risen to 1:5,120. The clinical histories of these two cases, together with the serological findings, leave little doubt that they were cases of actual infection. As these cases were some distance from a laboratory, it was not possible to confirm the diagnosis with a blood culture. Both these persons were closely associated with herds of cows.

The results as a whole seem to indicate that a titre of 1:20 is by no means uncommon in this locality, and is probably of no significance. Titres

over 1 : 80 may be regarded as suspicious. It is impossible, however, to state any definite titre which can be regarded as indicative of infection with this organism.

When the clinical condition is suggestive of *Brucella* infection, two examinations of the patient's serum, at an interval of a week or longer between them, would be of considerably greater help than any attempt to interpret the result of one examination alone where the titre recorded was a low one.

Summary.

1. Three hundred and ninety-six sera sent in for Wassermann tests were examined for agglutinins for *Brucella abortus*; 5·05% agglutinated this organism to a titre of 1 : 10 and over.

2. Titres over 1 : 80 may be regarded as suspicious, but a rising titre, as indicated by two examinations, serves as a more useful aid to diagnosis.

3. Of nineteen sera sent in from cases of pyrexia of unknown origin, two agglutinated *Brucella abortus* to titres over 1:5,000, which evidence, together with the clinical history, leaves little doubt that they were from cases of infection with this organism.

Acknowledgement.

In conclusion, I wish to thank Dr. N. Lorimer for permission to publish the details of the two cases mentioned.

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THE OCCURRENCE OF THE GRAVIS TYPE OF DIPHTHERIA BACILLUS IN VICTORIA.

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From the Bacteriology Department, University of Melbourne.

SINCE the original description of the *gravis* and *mitis* types of *Corynebacterium diphtheriæ* by the Leeds workers, Anderson, Happold, McLeod and Thomson[1] in 1931, and the subsequent description of the "intermediate" type by Anderson, Cooper, Happold and McLeod[2] in 1933, a considerable amount of investigational work has been carried out to determine the prevalence of these three types in different districts in Great Britain. Some interesting results of this work were reported at a meeting of the Society of Medical Officers of Health, by Mair *et alii*[3] in 1934, and figures relating to 2,000 cases of diphtheria in fever hospitals in Dundee, Glasgow, Hull, Leeds, London and Manchester, where the bacteriological type of infecting organism and the clinical condition were correlated, were tabulated as shown in Table I.

A remarkable case was also quoted of a school, where diphtheria had been endemic, being kept free from the disease for four years by a process of artificial immunization, though carriers of fully virulent diphtheria bacilli remained plentiful. In October, 1932, however, a *gravis* strain (of the same serological group as that predominant in Leeds) appeared for the first time and an epidemic of mild modified diphtheria broke out in this fully immunized population, the carrier rate being higher than ever before. It appeared, therefore, that this serological type of *gravis* was more infective and invasive than the average and that the school was only saved from a more severe and widespread epidemic by the fact that it had been inoculated against diphtheria, the cases which occurred in these partly immune subjects being trivial, and often unrecognizable without laboratory confirmation.

TABLE I.

Type.	Percentage Incidence.	Percentage Case Mortality.
Gravis	45	13·6
Intermediate	35	10·5
Mitis	17	3·2
Atypical	2	No death recorded.

These observations are in general accord with the findings of other workers, though there is definite evidence to show that the diphtheria bacilli conform more strictly to type under epidemic conditions than in sporadic cases.

Victorian Strains.

Though the incidence of diphtheria has been relatively high in the metropolitan and some provincial areas of Victoria for several years preceding 1935, there have been no reports of outbreaks in which the mortality rate was exceptionally high. At this laboratory much time has been spent in examining large numbers of swabs sent in by medical officers of health who were attempting to minimize the extent of outbreaks in districts where artificial immunization was not common, and consequently little attention could be given to the determination of types. During the last few months, however, a survey of types has been commenced and will be continued as time and opportunity allow.

During the month of October, 1935, forty strains of *Corynebacterium diphtheriæ* were isolated from positive routine swab cultures from the Melbourne metropolitan area and country districts, and as the result of preliminary work, five of these have been found to ferment starch and to give the characteristic *gravis* appearances in broth. On chocolate tellurite medium the colonies approximated most closely to the standard *gravis* type, though radial striation was not well developed. Two of the five starch-fermenting strains were from the metropolitan area, but the other three were from the Shepparton district, and were the only strains isolated in pure culture from five positive swabs out of a batch of forty-four forwarded from Shepparton for examination. This result suggests that the *gravis* type may be the prevalent infecting diphtheria bacillus at the present time in that area. Preliminary inquiries have shown that some cases in this district have been causing anxiety on account of the poor response to

antitoxin treatment, and, moreover, clinical symptoms of diphtheria have occurred in some children previously subjected to a process of artificial immunization.

Discussion.

Apart from a report by Sawers and Baldwin,[4] who failed to find any strains resembling *Corynebacterium diphtheriæ gravis* among forty positive cultures from Canberra, we have been unable to find any published papers relating to similar investigations in Australia. The present report is intended to draw attention to the fact that *gravis* types are to be found in Victoria, and that there is evidence to show that in at least one district where they occur cases have been reported in which clinical symptoms were unusually severe and in which artificial immunization had not afforded complete protection. It is hoped that practitioners and medical officers of health experiencing the same difficulties will supply swabs or cultures for further investigation. It is evident from the English figures quoted above that "intermediate" types may be of almost equal importance to the *gravis* from the clinical point of view, but although both "intermediate" and *mitis* types are present in the series isolated, neither has received sufficient examination for inclusion in this preliminary report.

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Reports of Cases.

NATURAL AMPUTATION OF THE APPENDIX.[1]

By W. R. ANGUS, M.B., B.S. (Adelaide), F.R.C.S. (Edinburgh),
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APPENDICITIS is a common complaint, but, as Sir Henry Newland, my old chief, used to say, "each case is a surprise packet". This case revealed a prize of some rarity, as I have searched available literature and can find no parallel case.

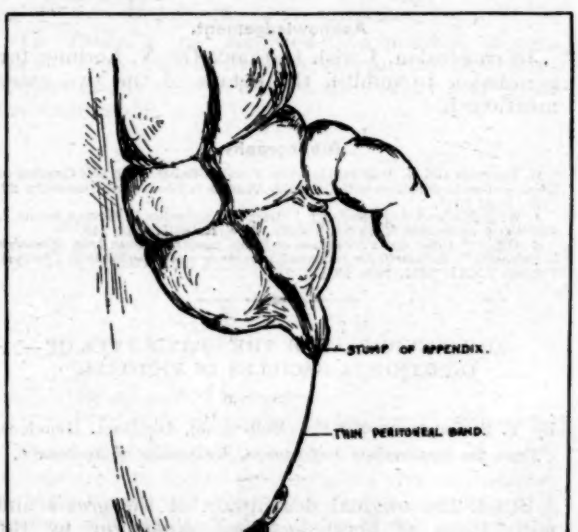
Mrs. J.H., aged thirty-eight years, was admitted to the Nhill Hospital on January 23, 1934, suffering from a general peritonitis, which, from her history and examination, had originated in the appendix. She had been ill at home for three days.

The abdomen was opened through a McBurney's incision and a large quantity of pus was evacuated from numerous loculi formed by inflamed and œdematous coils of bowel, densely matted together, and the appendix was not readily found. As her condition was serious, it was decided to remove the appendix at a quiescent stage, and a large rubber tube was placed into the pelvis and another into the paracolic gutter, and the wound was closed with three through-and-through silkworm gut sutures.

General treatment was instituted by using Murphy's proctolysis, Fowler's position, large abdominal foments, gas gangrene antiserum, and "Aolan". After a stormy convalescence the patient recovered and was discharged, with the advice to return in three months for the removal of the appendix.

She failed to return, and nearly twelve months later I was called to see her and found that she had developed another abscess in the right iliac fossa. On December 3, 1934, the abdomen was again opened under general anæsthesia and about three-quarters of a pint of thick pus were evacuated and again the abscess cavity was drained. A commencing hernial sac was noted at this operation, but plastic repair could not be done on account of the sepsis. Her convalescence this time was quiet, as the infection was localized. She was again advised to return for the removal of the appendix after three months.

My reasons for not removing or attempting removal of the appendix at this second operation were briefly as follows: (i) The presence of a hernia in a septic field made a further operation necessary. (ii) The localization of the sepsis had to be conserved. (iii) The appendix was not easily accessible at the first operation and there was no reason to think that there would be any change at the second.



NATURAL AMPUTATION OF THE APPENDIX.

She did not arrange for the secondary operation until the hernia, which by this time had well appeared, began to give her trouble, and on October 22, 1935, she was taken to the operating theatre for her much delayed operation, at which the real interest of the case was revealed.

Under a spinal anæsthetic the old scar was excised and the neck of the hernial sac was isolated and removed together with a mass of adherent omentum. On inspection

[1] Read at a meeting of the Victorian Branch of the British Medical Association on November 23, 1935.

the contents of the abdomen did not show a mass of adhesions, as might have been expected from the foregoing details; in fact there were no adhesions at all between the coils of intestines. The appendix was then sought for and only a stump of about three-quarters of an inch of the base of the appendix was found attached to the caecum. There was a thin band of peritoneum, practically devoid of blood vessels, attached to the end of this stump, and on tracing this downwards the remainder of the appendix—about two and a half inches of the distal part—was found, completely isolated from the bowel for a distance of about three inches, and growing in an apparently healthy state to the lateral wall of the pelvis (see accompanying figure). This isolated part of the appendix, amputated by Nature, had derived a separate blood supply through an adventitious mesentery attached to the parietal peritoneum of the right iliac fossa. This was easily ligated and the specimen shown was removed. The hernia was then repaired by Mayo's imbrication operation. Convalescence was uneventful and the patient was discharged from hospital cured.

The specimen shows dense fibrosis in the walls of the appendix, almost obliterating the lumen in the proximal part, whilst in the distal part there is a definite concretion which seems to be undergoing some change from infiltration or degeneration. (The distal end has been cut and half of it reversed to show the concretion *in situ*.)

My object in reporting this case is twofold: first, because of its unique character; secondly, to demonstrate the remarkable power of the peritoneum in dealing with purulent infections in the lower part of the abdomen and the safety that attends conservative surgery in cases which otherwise might end in disastrous results.

Acknowledgement.

I wish to thank Dr. Charlton, Secretary of the North-Western Subdivision of the Victorian Branch of the British Medical Association, for arranging for me to report the case.

COMPLETE PROLAPSE OF THE RECTUM: A CASE TREATED BY GABRIEL'S TECHNIQUE.

By KEITH ROSS, M.S.,
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COMPLETE prolapse of the rectum in an adult is comparatively rare, and in the past the majority of the treatments advocated have been severe and not always satisfactory. Gabriel[1] has described a simple method of treatment devised by Edwards and himself, and as I have recently had the opportunity of testing their method the notes of my case may be of interest to others.

Mrs. L., a *multipara*, aged fifty-seven years, was referred to me by Dr. R. L. Fulton with a complete prolapse of the rectum of some years' duration. If she walked more than a few paces the bowel came down and her clothing was frequently being soiled. Examination revealed a complete prolapse of the rectum, the bowel protruding rather more than 8·75 centimetres (three and a half inches) from the anus. The anal sphincter had very poor tone and the vaginal outlet was considerably relaxed. The patient was willing to submit to any measures whatsoever in order to obtain relief.

After her admission to hospital and routine rectal preparation the treatment exactly as advocated by Gabriel was instituted, with the exception that caudal instead of low spinal anæsthesia was used. For the benefit of those who do not have access to Gabriel's book, this treatment may be briefly stated as follows:

1. A series of high submucous injections of 5% phenol in almond oil is made right round the rectum.

2. Three injections, one posterior and two lateral, of a solution of quinine are made into the perirectal tissues at a depth of 8·75 centimetres (three and a half inches). The left forefinger in the rectum guards the bowel from perforation during insertion of the needle. The solution has the following formula: quinine sulphate, 0·72 gramme (12 grains); dilute sulphuric acid, 2·0 cubic centimetres (30 minims); distilled water, 2·0 cubic centimetres (30 minims). The solution is sterilized by boiling. Vaseline is injected into the rectum and a firm dressing is applied.

3. The sphincter muscles are exercised by voluntary contractions.

4. The bowels are confined for a week and are then opened without straining.

5. If necessary, further submucous injections of phenol are given at later dates.

The subsequent course of the patient is of some interest. For two days after the injections she exhibited severe quininism, and this perhaps is scarcely to be wondered at, for, following Gabriel's directions, nine cubic centimetres of the quinine solution, containing 3·6 grammes (sixty grains) of quinine, were used. Apart from this there was a complete absence of untoward events. A ring of perirectal induration developed at the site of the quinine injections and remained for several weeks. Looseness of the mucous membrane of the lower part of the rectum necessitated several further submucous injections, and even with these it has not been found possible to make the last inch of mucous membrane take up. This is surprising in view of the way a partial prolapse associated with hæmorrhoids will respond to submucous injections of phenol. Also Morley[2] has reported two cases of complete prolapse relieved by phenol injections alone, though it is to be noted that he advises that the injection be made not into the submucous coat, but into the muscular coat.

The patient received her first treatment sixteen months ago and has not had any treatment at all for over a year. To obtain a perfect surgical result she would need to have the redundant mucosa mentioned above ligatured or cauterized and also a perineorrhaphy. However, she feels no need for these, as the bowel causes her no discomfort and she has perfect control of her motions, except during an occasional attack of diarrhœa.

I have been tempted to record this case because of the interest displayed in the columns of *The British Medical Journal* last year on the treatment of prolapse, because the cases recorded as having been treated in this way are few, and also because Lockhart-Mummery[3] has damned this method with faint praise.

Acknowledgement.

I wish to express my indebtedness to Dr. Fulton for giving me the opportunity of treating this patient, and to Mr. Gabriel for his writings on this and other matters.

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Reviews.

TREATMENT.

"METHODS OF TREATMENT", by Logan Clendening, in reaching its fifth edition gives evidence of its undoubted popularity.[1] It would be difficult to find a book bearing a more marked stamp of its author's personality. On reading this treatise we can imagine a sparkling and joyously tolerant sprite peeping between the lines.

[1] "Methods of Treatment", by L. Clendening, M.D.; Fifth Edition; 1935. St. Louis: The C. V. Mosby Company; Melbourne: W. Ramsay. Royal 8vo, pp. 879, with illustrations. Price: 60s. net.

Dr. Logan Clendening covers in the 800 odd pages of this work the whole realm of medical treatment. His teaching is sound, and his descriptions of diagnostic and therapeutic manipulations are clear and interesting.

In no part of the book does the author shine more than in his description of the medical treatment of patients suffering from the neuroses. Here indeed we feel the influence of a physician possessed of experience, keenness and tolerance. The chapter dealing with the methods of handling these patients should be read by all practitioners, and if the author's tenets were followed much unnecessary and expensive doctoring might be eliminated.

This book may be heartily recommended to general practitioners and students, and would not be amiss on the desks of many physicians.

BIOLOGICAL CHEMISTRY.

"CLINICAL BIO-CHEMISTRY", a companion volume to "Practical Bio-Chemistry" (Osborne and Young), has now reached its third edition.[1] The contents of the book cover the field of clinical biological chemistry in an adequate manner and are on the whole well balanced. Each chapter contains a consideration of the theoretical aspect of the subject, a description of tests used for investigation, and in general a criticism of their value.

This edition brings the subject matter up to date and includes a chapter on basal metabolism. The scope of reference is refreshingly international, and Australian workers find a place. The book has been kept within a fairly compact compass and has at once the advantages and disadvantages of a one-man book. It can be recommended with confidence as adequate for the requirements of students in medicine; it could be studied with advantage by practitioners who wish to keep abreast of recent work in the wide field of biological chemistry.

URINARY TRACT INFECTIONS.

T. E. HAMMOND'S "Infections of the Urinary Tract" is a series of addresses to general practitioners on their daily problems.[2] It is based on clinical impressions rather than statistics, and the author makes no attempt to cover the whole field of urinary infections.

A considerable amount of space is devoted to bacterial inflammations, the reactions of the body and the effects of antiseptics. Diseases are considered in six stages: progress, ripening, decline, convalescence, relapse and chronicity. For each stage the most appropriate method of assisting the body to concentrate its own defences against the cause of the disease is recommended, according to the type of infection, the nature of the reaction and the constitution of the patient.

Great stress is laid on the type of the patient's constitution and any inherent diathesis. Sir Jonathan Hutchinson and Sir James Paget are extensively quoted in support of the theory of general measures rather than active local treatment for the cure of infections. The hypothesis that oral and intravenous antiseptics which are excreted by the urinary tract can influence only the bacteria which are in the urine or on the mucous membrane (where they cause little damage) is accepted without discussion. Therefore we find that "when drugs do good in urinary infections, this is to be attributed to some change in the constitution to which they lead".

The local manifestations of bacterial disease are considered individually, with emphasis on the natural course of the illness. Thus the value or hindrance of any system of therapy is estimated and the appropriate method of assisting Nature and the most opportune time for so doing are indicated.

The part played by bacteriology in therapy has been disappointing. In these days of numerous laboratories and expensive research it is well to take stock of our progress. Dr. Hammond observes that: "Bacteriology has, unfortunately, not given us that lead in therapy that was anticipated; it is more content to go on with research. It is over fifty years since the tubercle bacillus was discovered by Koch. This discovery has been of great value in helping in early diagnosis and in elucidating the pathology of tuberculosis. But treatment is much the same."

The frequent incidence of obstruction to the free exit of urine in association with persistent infections does not receive the attention which it deserves in talks to general practitioners. Nor do the cystoscope and its appurtenances receive much notice, either in the sections on diagnosis or treatment; radiology is only casually mentioned. As the book is devoted mainly to bacteriology and inflammation, these may not be regarded as shortcomings, but the comparative neglect of these important features may tend to make the practitioner keep his patients too long before consulting an expert.

In many respects Dr. Hammond's views are reactionary, but they are presented in an original manner. The author's customary lucidity in style, combined with good printing, makes easy reading. For the medical student the views so cogently expressed in these pages are somewhat too narrow, but any practitioner with some clinical experience behind him will find in their perusal many valuable suggestions and much to interest him.

BACKACHE.

BACKACHE is such a common complaint that it is surprising how vague are the ideas as to the underlying causative pathological changes. Dr. James Mennell's book, second edition, should be read by everyone practising medicine, particularly the man engaged in general practice.[1] Not that he will carry out the very elaborate examination, nor keep record of the very minute details as suggested by the author, but because he will realize the possibility by careful observation backed by radiography of separating out the various conditions which may give rise to the common complaint of backache.

It is generally recognized that manipulative methods are often very successful in the hands of unqualified practitioners and the public has a right to expect members of the medical profession to be at least the equal of the quacks in any procedures capable of bringing relief to sufferers. During his training, the medical student has practically no chance of learning how to manipulate joints. Dr. Mennell has supplemented, by means of very clever line drawings by Miss Morris, his descriptions of manipulations carried out both during examination to establish a diagnosis and in treatment. A very clear idea is obtained by the reader of the object of each manœuvre as well as the proper method of carrying it out. Very properly a warning is given concerning the danger of manipulations before accurate diagnosis has been made; and if a fault is to be found it is that the contraindications and dangers are not given a little more prominence, as, for instance, in a separate chapter.

The final chapter on prophylaxis draws attention to many important points often overlooked; for instance, the frequency of relatively short calcanean tendons for which the low heel is impossible with comfort but often advised.

The monograph is not too big, 218 pages; it is easy to read and descriptions are made clear by the excellent line drawings before mentioned.

[1] "Clinical Bio-Chemistry", by I. Maxwell, M.D., B.S., M.Sc., B.Agr.Sc.; Third Edition; 1935. Melbourne: W. Ramsay. Demy 8vo, pp. 297.

[2] "Infections of the Urinary Tract", by T. E. Hammond, F.R.C.S.; 1935. London: H. K. Lewis and Company, Limited. Demy 8vo, pp. 262, with illustrations. Price: 10s. 6d. net.

[1] "Backache", by J. Mennell, M.A., M.D., B.C.; Second Edition; 1935. London: J. and A. Churchill, Limited. Demy 8vo, pp. 237, with illustrations. Prcie: 10s. 6d. net.

The Medical Journal of Australia

SATURDAY, FEBRUARY 22, 1936.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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THE CLINICIAN AND THE PATHOLOGIST.

KNOWLEDGE of the cause of disease and of its effects on the body has advanced to such a degree that in many conditions no exact diagnosis can be made, the effects of treatment cannot be gauged, and a proper prognosis cannot be given without recourse to the science of pathology—morbid anatomy and bacteriology. Every clinician can bear witness to the truth of this statement. A woman who is approaching middle age comes complaining of irregular or excessive uterine bleeding. An examination is made and what is known as an erosion of the *cervix uteri* is found; in an attempt to settle doubt that may arise, a biopsy is made, and future treatment will be determined by the result of microscopic examination of a section or series of sections. A patient is acutely ill as a result of an infective process that obviously involves the central nervous system; a diagnosis cannot be made, still less can an accurate prognosis be given, until a lumbar puncture has been performed and the identity of the infecting organism has been determined. Perhaps the process is not acute and the cerebro-spinal fluid may need to be subjected to the Wassermann test and the gold sol test. A man may come complaining of weakness and inability to do his work; he is obviously anæmic and clinical examination reveals all the signs and symptoms that usually accompany anæmia. If examination of his blood reveals the presence of pernicious anæmia, the success of treatment may be judged and the patient's future activities controlled by periodical examination of his blood. Without the enumeration of further examples, it may be stated that the frequency with which the practitioner uses pathological methods of investigation in equivocal conditions is an indication of his desire for accuracy and of his wish to do the best he can for his patient.

On many occasions in the past we have discussed in these columns the subject of clinical pathology and the types of investigation that may, or should, be undertaken by the clinician. Sometimes protest has come from those who could not, or would not, be bothered with microscope, incubator or test tube. Provided a clinician realizes the importance of clinical pathology, the extent of the investigational work that he does for himself will depend on the amount of time that he can make available from an otherwise busy practice, on his nearness to a skilled and congenial pathologist, and on his own aptitude and temperament. Incidentally it should be emphasized that consultant pathologists have no need to fear that the adventures of clinicians into the field of pathology will restrict their own activities. On the contrary, clinicians who always make routine examinations for themselves will value the opinion of a consultant and will, much more often than their less discerning clinical brethren, seek his aid in difficult cases. This subject was mentioned in a recent post-graduate lecture by Professor Ludwig Fraenkel, Professor of Obstetrics in the University of Breslau. Professor Fraenkel showed microscopic sections of tissue taken from ulcerated areas in the uterine cervix and

sections of polypi from the uterus. He pointed out that many pathologists would regard the conditions as precancerous; he held that they were benign. In subsequent discussion it was suggested by one speaker that the change in the polypus might after all be precancerous, and that if the change was precancerous any evil effect that might subsequently have arisen had been nullified by removal of the polypus. Professor Fraenkel agreed with this statement, but pointed out that the changes in the sections of tissue taken from the uterine cervix were similar to those in the polypus, and that the patients from whom the cervical tissue had been removed had not been subjected to hysterectomy and were alive and well ten years later. He said that he was a clinician, and as a clinician he, and he alone, had to decide whether a uterus should be removed after a biopsy had been made; he said that therefore, while he might seek advice from a pathologist, he believed that a clinician should be familiar with the microscopic appearances of sections and should be prepared to form an opinion about them. This brings us to the question of the relationship between the clinician and the pathologist.

That no clinician and consultant, be he the consultant pathologist, radiologist, biological chemist or other specialist, can achieve the best results without collaboration is well known. The ideal conditions have frequently been stated. When possible clinician and consultant should meet and discuss the case. If this is not possible, the clinical history of the patient should always be sent to the consultant; unfortunately this is not often done. Professor Fraenkel, though dealing with pathology only, has emphasized the other aspect—that the clinician should endeavour to become familiar with the point of view of the consultant. Whether a clinician is likely to become a successful clinical pathologist will depend on his diligence most of all. It should be taken as an axiom that a clinician should always examine for himself the section on which a pathologist has reported, to increase his own knowledge if for no other reason. In any case the clinician will be wise to remember, as Professor Fraenkel so well emphasized, that whatever the consultant pathologist may advise, the clinician must take the responsibility for subsequent treatment.

Current Comment.

STRAMONIUM IN PARKINSONISM.

STRAMONIUM has been used for a number of years in the treatment of the rigidity and drowsiness that may follow *encephalitis lethargica*; but not many people appear to appreciate its value. It has been shown that many patients who would otherwise be helpless invalids can, by the regular use of stramonium, enjoy a comfortable existence, care for themselves, and even work for a living. The drug is given by the mouth in the form of the tincture, pilocarpine being added, if necessary, to counteract the toxic effects. Large doses are necessary. The use of stramonium is advocated and a case of post-encephalitic Parkinsonism is reported in a paper by H. Stott.[1] In addition to the administration of stramonium, he advises physical drill and psychotherapy. Tincture of stramonium is given in a dose of 2·0 cubic centimetres (30 minims) in 15·0 cubic centimetres (half an ounce) of water three times a day, after food. The dose is increased by 0·3 cubic centimetre (five minims) on alternate days until slight dryness of the mouth or paralysis of accommodation is observed. Pilocarpine nitrate in a dose of 0·006 gramme (one-tenth of a grain) is then added. The dose of the tincture of stramonium may be increased to 4·0 cubic centimetres (one drachm) and the pilocarpine nitrate to 0·024 gramme (two-fifths of a grain). The optimum dose is continued for the remainder of the patient's life. In some cases pilocarpine is not required. Physical and mental reeducation is achieved by means of physical exercises, the carrying out of various tasks, encouragement, praise *et cetera*. Stott's patient was lethargic and almost completely bedridden, never moving unless bidden to do so, unable to feed himself, and capable of walking only "very slowly, stiffly and with the greatest difficulty". Five days after the commencement of treatment he left his bed of his own accord and walked. After another week he was able to feed himself, and four days later still, was able to dress himself. When it is remembered that the patient had made no voluntary movement for four months, the results of treatment must be regarded as remarkably good.

Stott points out that hyoscine reduces the tremor, but has no effect on the rigidity of *paralysis agitans* (Parkinsonism of senility). Presumably the same remark would apply to stramonium. Certain other authors believe that hyoscine does reduce rigidity in *paralysis agitans*. It would be wise for the

[1] *The Indian Medical Gazette*, November, 1935.

medical practitioner to be sure of the diagnosis of post-encephalitic Parkinsonism, as distinct from senile Parkinsonism, before reaching any conclusions regarding the value of stramonium.

If stramonium is only half as effective as Stott believes it to be, it is a very valuable drug in the treatment of post-encephalitic Parkinsonism. It does not seem to have received the attention it merits; that is the main reason why it is mentioned here.

RHEUMATIC HEART DISEASE.

ACCURATE descriptions of the course of chronic disease are most difficult to make; the patients are usually seen over a period of years by many different observers, and in most cases continuous records are not available. The Heart Committee of the New York Tuberculosis and Health Association has recently sponsored an analytical review of 1,633 cases of rheumatic heart disease, with the purpose of obtaining reliable information concerning the factors governing the course of the disease. The facts were collected from certain of the departments of the Bellevue Hospital and from private practices. All case histories were recorded in a uniform manner on charts provided by the committee, and they were analysed by Arthur C. De Graff and Claire Lingg.[1] It is interesting to observe in passing that one of the large insurance companies made this research possible by a special grant of funds, an example that might be followed elsewhere with advantage. The authors remark that no one sees the beginning of cardiac rheumatism, its middle and its end. This is in the main true. Certainly any one man sees the whole course of only a strictly limited number of patients; but it is just for this reason that the subject should be of interest to those in contact with families as their medical attendants. The outlook for a given rheumatic patient with heart disease is something we all want to know; information is eagerly sought by relatives, and it is essential for us to have accurate figures on which to base our judgements.

The 1,633 cases were studied over a ten-year period, at the end of which at least 644 (39·4%) patients had died, 380 (23·2%) could not be traced, and 609 (37·3%) were still alive. The first point studied was the effect upon prognosis of the age at which the initial infection occurred. This is known to vary widely; in this series it varied from two to sixty-three years, but the greatest incidence occurred at ages from ten to nineteen years. In general it is found that the younger the patient at the time of first infection, the longer the interval before death, although pædiatricians have felt that it is a serious matter for the disease to start in very early life. It is, of course, extremely difficult to estimate the degree of actual myocardial damage inflicted on a given patient, and on this nearly everything depends. In their analysis De Graff and Lingg used only the records of those patients who had died within the test period; but they feel that these patients represented a fair sample of the community suffering from rheumatic heart disease. It is, of course, possible for individuals to live for many years even with cardiac rheumatic disease; but these figures prove that in this group three-fourths did not survive beyond the age of forty years, half were dead before the age of thirty-three, and the mean duration of life from the onset of rheumatic infection to death was only fifteen years. This last figure is much lower than that of thirty years given by the late Carey Coombs; but his statistical methods are queried by the present authors. Cardiac insufficiency occurred in practically all the patients who died, and symptoms first arose within eleven years after the date of infection. Once a definite heart failure was established, the average duration of life was only three years, and in 75% of the cases it was less than five years. The seriousness of the position is evident on a perusal of these figures. There is a definite, if not large, incidence of cardiac rheumatism among young Australian people. Let us reflect on the fact that few of these will live to be forty. The average patient may be infected by the age of seventeen years and may carry on a life of moderate activity till he is twenty-eight; by now he begins to suffer from a diminished cardiac reserve, and in two more years his heart definitely fails; after three years of incapacity he will probably be dead.

What is the influence of valvular disease *per se* on the patient's future? De Graff and Lingg cannot find that it matters much. When the pulmonary and tricuspid valves are affected, the outlook is slightly less favourable than in the case of mitral and aortic disease; but the work here presented supports the earlier conclusions of Flint and MacKenzie that valvular disease in itself gives no information of value in assessment of the prognosis. Nor does auricular fibrillation *per se* alter much the expectancy of life; for it is a more or less late manifestation of rheumatic heart disease. In the present series it was observed in 42·8% of the patients who died over the ten-year period, and it was found to be most common in the relatively long-standing cases. Of course, fibrillation may supervene fairly early; but the simplest way of stating the chances of any patient suffering from this arrhythmia is to say that the longer his disease lasts, the greater is the likelihood of fibrillation. Once fibrillation is established the duration of life is likely to be short, not so much because of the occurrence of fibrillation *per se* as because it is a clear indication of other unfavourable features of the disease.

These facts may help to enable us to arrive at an estimate of how long the patient with rheumatic heart disease may live; they are also hard and sobering facts, inasmuch as they impress upon us the great damage inflicted on a young and otherwise useful section of the community. Need it be added that a long and careful period of convalescence is the right of every rheumatic child?

[1] *The American Heart Journal*, April and June, 1935.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Intracorneal Injections of Cyanide of Mercury in Trachomatous Pannus.

ACHIEVING good results in twenty-five cases, E. S. Shalom (*The British Journal of Ophthalmology*, February, 1935) recommends the injection of 0·5 cubic centimetre of a 1 in 1,000 solution of cyanide of mercury into the cornea in cases of severe pannus. With "Pantocain" anæsthesia a fine needle is introduced tangentially into the corneal substance, about one millimetre from the limbus, and the solution is injected. At first there may be increased hyperæmia, but the pannus soon begins to disappear.

Infra-Red Photography of the Eye.

W. A. MANN, JUNIOR (*Archives of Ophthalmology*, June, 1935), describes the use of infra-red photography in the diagnosis of disorders of the anterior segment of the eye. Reflexion and bending of light by small particles are dependent on the wave-length of the light; the longer the wave-length, the less the dispersion of the incident ray through bending. A cloudy medium becomes more transparent towards the red end of the spectrum, and clearest when the infra-red rays are used in photography. Hence in cases of complete opacity of the cornea a photograph may be taken of the structures beneath. The state of the pupil and the presence of synechiæ may be determined.

Epinephrine Bitartrate in Ophthalmology.

F. C. CORDES AND D. O. HARRINGTON (*American Journal of Ophthalmology*, May, 1935) recommend the use of synthetic epinephrine bitartrate for other purposes besides glaucoma. It is a quick and powerful mydriatic and yet more transitory than homatropine. The pupil recovers in five or six hours. It is therefore a useful mydriatic for examination purposes, and safe in old people. It is useful in acute iridocyclitis and has dilated pupils and broken adhesions where even subconjunctival injections of atropine and adrenalin have failed. It is an ideal mydriatic for operation on congenital cataract, and its marked hæmostatic properties recommend it in operations for chalazia and detached retina, and in cyclodialysis for glaucoma. The solution used is one ampoule (0·091 gramme) in 4·5 cubic centimetres of an alkaline buffer solution. It is applied to the conjunctival sac by a cotton pledget.

Deepening the Anterior Chamber.

H. J. HOWARD (*American Journal of Ophthalmology*, May, 1935) describes a simple method of deepening the anterior chamber preliminary to section of the cornea by keratome or von Graefe knife. A puncture is made with a von Graefe knife 1·5 millimetres behind the limbus, and the knife stopped as soon as the point appears in the anterior chamber. It is then withdrawn. A small needle attached to a syringe is inserted into the wound and warm saline solution introduced into the anterior chamber. The major section may then be easily accomplished.

Diskiform Degeneration of the Macula.

A. R. KAHLER AND C. S. O'BRIEN (*Archives of Ophthalmology*, June, 1935) report fifteen cases of diskiform degeneration of the macula, all in old people. They say it is a rather common, but frequently unrecognized, type of senile ocular disease. Most of the reports are illustrated by drawings of the condition. The lesion appears in the macular region as a yellowish-white or grey opaque mass situated beneath the transparent retina. It may or may not be elevated. The size varies from less than the nerve head to many times larger. Hæmorrhages and deposits of pigment are frequent. The shape assumed is often most weird. The lesion must not be mistaken for sarcoma.

Dinitrophenol and Cataract.

W. W. BOARDMAN (*The Journal of the American Medical Association*, July 13, 1935) reports six cases of cataract following the taking of dinitrophenol for obesity. A woman, aged fifty years, was given this drug for nearly two years, reducing her weight from 107·7 kilograms (237 pounds) to 73·2 kilograms (161 pounds). She complained of dimness of sight in both eyes, and within a week sight was lost. The ages of three other patients were thirty-six, thirty-nine and forty years respectively. Their history was similar.

W. D. HORNER, R. B. JONES AND W. W. BOARDMAN (*The Journal of the American Medical Association*, July 13, 1935) report three cases of cataract following the taking of dinitrophenol. One patient consumed 1,072 hundred-milligramme capsules in eighteen months; another, 1,141 hundred-milligramme capsules in sixteen months.

Exophthalmos and the Ocular Muscles.

A. BIELSCHOWSKY (*American Journal of Ophthalmology*, June, 1935) gives a reminder that the recti-ocular muscles have, in addition to their principal functions, the function of retractors. Unguarded tenotomies produce exophthalmos; advancements and resections produce some degree of enophthalmos. In a disfiguring enophthalmos of traumatic origin it is permissible to tenotomize all the recti muscles to bring the eye forward, provided the eye is sufficiently amblyopic to preclude diplopia. It has been suggested that in exophthalmos, if the vision is threatened, one may bring about retraction by shortening all the recti muscles. The author is not sure whether this has ever been done. But in a woman of fifty-five with disfiguring exophthalmos he advanced both right internal and external recti muscles with satisfactory result. He reports also the case of a man, aged forty-two years, with a history of syphilis, who complained of diplopia from paralysis of the right superior rectus muscle. There was also exophthalmos. Advancement of the superior rectus muscle removed the exophthalmos and lessened the diplopia. A guarded retroplacement of the right inferior rectus a year later completed the cure.

Uveitis and Alopecia, Poliosis and Deafness.

W. S. DAVIES (*Archives of Ophthalmology*, August, 1935) discusses the literature of twenty-four cases of uveitis with alopecia. The disease is similar to sympathetic ophthalmitis. Syphilis has been reported in some of the cases, but is usually absent. In 64% of the cases the patients are males and in 36% females, the ages ranging from ten to forty-seven years. Alopecia and poliosis appeared in all the reported cases, also poliosis of the eyebrows and lashes. Tinnitus and deafness were found in half the cases. The author reports the case of a man of thirty-one years, who, after headaches, developed severe iritis in both eyes. This was soon followed by lethargy and deafness, alopecia and poliosis. The patient's oral hygiene was poor, and he had septic tonsils, rhinitis, polypi, sinusitis and constipation. Six months later the eyes were quiet, and there were no subjective symptoms.

OTO-RHINO-LARYNGOLOGY.

Deafness.

ALBERT A. GRAY (*The Journal of Laryngology and Otology*, October, 1935) describes the treatment of otosclerotic and similar types of deafness by the local application of thyroxine. The treatment was employed in fourteen cases, considerable improvement resulting in seven. In these seven, tinnitus was greatly relieved when present. Wax also began to be secreted again. Cases in which the disease is in its latest stages, however, do not respond to the treatment. The presence of *paracusis Willisiana* is no contraindication to treatment. The method of treatment is simple and can be carried out without difficulty by any otologist. It is practically or completely painless and does not interfere with the patient's daily activities. The rationale of the treatment depends upon the writer's view that otosclerosis is the result of a diminished blood supply to the organ of hearing, consequent upon a gradual failure of the vasomotor responses. The action of thyroxine applied

locally is to produce an active congestion without inflammatory reaction and continuing for a long time. It is not possible to say how often the treatment may have to be repeated. The improvement, when it occurs, lasts in some cases for several weeks; but sooner or later the effects must be expected to pass off. The present paper is of the nature of a preliminary communication. In the meantime the author expresses the hope that others will investigate the matter and let the results of their experience be known. The method employed in the application of the thyroxine to the ear consists in injecting 0·47 milligramme ($^1/_{128}$ grain) of the drug suspended in 0·25 cubic centimetre (four minims) of distilled water through the tympanic membrane into the inner part of the middle ear by means of an ordinary well-made and smooth-working hypodermic syringe. Anæsthesia of the tympanic membrane is obtained by the instillation of 15 or 20 drops of a solution consisting of ten parts of cocaine hydrochlorate dissolved in ninety parts of aniline. The aniline must be freshly prepared and should be colourless or of a very faint straw tint. After the solution has been in the meatus for five minutes it must be carefully wiped out with absorbent cotton mops so that there may be no fear of aniline poisoning.

Infections of the Neck.

FRED Z. HAVENS (*Archives of Otolaryngology*, May, 1935), having studied an unselected series of 125 cases, discusses the deeper types of suppurative infections in the neck. The author's policy has been to follow a conservative plan of treatment, allowing these abscesses to go on to a stage in which fluctuation can be made out or until it can be determined where the abscess has become localized, before surgical treatment is instituted. He believes that in acute suppurative conditions in the neck the pus does not burrow along the fascial planes as frequently as the anatomist would have us believe. Instead, in the vast majority of cases Nature builds a barrier around the abscess and forces it to burrow towards the surface. He is also of the opinion that jugular thrombosis is an infrequent complication of acute suppurative conditions in the neck. The possibility of its occurrence always should be borne in mind, however, and there should be little difficulty in recognizing it, so that appropriate treatment can be instituted.

Acute Otitis Media.

VIGGO SCHMIDT (*The Journal of Laryngology and Otology*, August, 1935) describes the treatment of acute suppurative *otitis media* by syringing with alcohol. After incision of the tympanic membrane, sterile cotton pledgets and hot compresses are applied for from twenty-four to forty-eight hours. The ear is then syringed with 33% alcohol, to which is added a 2% "Percain" solution; the alcohol has a temperature of 37° C. The syringe is an ordinary "Record" syringe with a capacity of 10 or 20 cubic centimetres. No cannula is used. The alcohol is not squirted into the ear, but is introduced gradually by an even pressure on the piston rod. The cone of the barrel passes through a hole in the centre of a rubber disk, which measures about 2·5 centimetres in diameter. This rubber disk is pressed against the wall of the inlet to the external meatus, so that the cone of the barrel enters the most external part of the meatus. The author is of the opinion that when the hole in the tympanic membrane is widened by the shrinkage and the Eustachian tube is opened for outflow of the exudate, and the greatly thickened mucous membrane of the middle ear has shrunk through the astringent effect of the alcohol, the best conditions are obtained for that ventilation of the mastoid cells which alone can prevent the inflammatory destruction of the bony cell walls—the destructive mastoiditis.

Suture of the Severed Tip of the Nose.

J. N. ROY (*Journal of Laryngology and Otology*, July, 1935) gives the clinical record of a boy, seven years of age, who had the tip of his nose completely severed. The severed tip measured about five centimetres in length and thirteen millimetres in its greatest breadth. After being carefully washed in tepid normal saline solution it was placed in the same solution and kept there for an hour at a temperature of 36·8° C. (98·2° F.). Exactly three hours after the accident the tip of the nose was carefully coapted and sutured with silk by means of small conjunctival needles. Healing was perfect on the right side. On the left side a small cutaneous fragment died, because it was in contact with the denuded cartilage of the nostril, and consequently ill-nourished. However, it will be easy to repair this notch and the naso-labial fold later on.

Malignant Disease of the Larynx: Its Treatment by Laryngo-Fissure and Laryngectomy.

CHEVALIER JACKSON AND CHEVALIER L. JACKSON (*The American Journal of Surgery*, October, 1935) discuss the treatment of malignant disease of the larynx by laryngo-fissure and laryngectomy. The operation of laryngo-fissure affords access to the interior of the larynx by splitting the thyreoid cartilage. It is indicated in intrinsic cancer of limited extent and of any type or degree of malignancy. In cases in which the anterior wall of the arytenoid eminence is involved, even though the growth has not yet become extrinsic, laryngo-fissure had better not be done if the malignancy is graded as "III" or "IV". If, however, the case is of grade "I" or "II", laryngo-fissure is indicated. In such cases, however, it is necessary to remove all the corresponding arytenoid cartilage. Access by laryngo-fissure is ample for this procedure. When, however, the growth has become even partially extrinsic by extension, it is beyond the limits of adequate removal by laryngo-fissure. Laryngectomy is indicated in: (i) cases of intrinsic cancer of the larynx that have extended so far posteriorly that laryngo-fissure is likely to be inadequate, especially if the growth is of malignant type, graded as "III" or "IV"; (ii) extrinsic malignant disease of limited extent, if of grade "I" or "II". If the growth is very extensive, of type "I" or "II", or if it is not extensive, but of type "III" or "IV", radiation is preferable to operation of any kind. With regard to the necessity of removal of a perfectly normal larynx in order to obtain adequate access to a growth involving the base of the tongue or involving the hypopharynx, the authors' experience has led them to believe that it would be better to treat the patient by radiation rather than sacrifice a normal larynx.

Neoplasms Involving the Middle Ear.

LEROY A. SCHALL (*Archives of Otolaryngology*, November, 1935) states that in no field of otology is there so much confusion as in the treatment of neoplasms of the middle ear. He concludes that these tumours are not medical curiosities. Every bleeding aural growth should be suspected of being malignant until microscopic examination proves otherwise. A malignant growth presenting itself beyond the isthmus of the external auditory canal is a potential lesion of the middle ear. Radical mastoidectomy, with removal of the entire cutaneous canal, is indicated in every case of malignant growth appearing in the external auditory canal beyond the isthmus. This procedure is to be followed by irradiation. That five patients have had no recurrence from two to more than four years after treatment is proof that the prognosis in this disease is no longer hopeless.

Carcinoma of the Pharynx.

CHARLES L. MARTIN (*The American Journal of Surgery*, October, 1935) deals only with carcinomata that originate in the posterior nasopharynx, in and about the tonsil, on the base of the tongue posterior to the circumvallate papillæ, in the pyriform sinuses, and on the lateral walls of the oropharynx. This group of tumours is peculiar in that many of them are so poorly differentiated that pathologists find it difficult to agree on their proper classification. The author concludes that surgery in cancer of the pharynx is difficult and often mutilating, and the results have not been encouraging. The divided dose X ray technique augmented by interstitial radium application offers a better chance of cure and frequently produces considerable palliation in the incurable cases.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Victorian Branch of the British Medical Association was held at the Children's Hospital, Melbourne, on October 16, 1935. The meeting took the form of a series of clinical demonstrations arranged by the members of the Melbourne Pædiatric Society.

Asthma and Postural Exercises.

DR. D. M. EMBELTON, DR. MONA BLANCH and MISS VERA CARTER showed a series of children with asthma to illustrate the effect of exercises designed to assist expiration and to diminish the rigidity of the chest and spine. The patients formed three groups. The first group consisted of four children, patients at the Alfred Hospital, who had been doing exercises for periods of nine months to two years. These children had developed excellent stance and muscle control, and the asthmatic attacks had become very infrequent and much less severe. In the second group there were five children who had been treated, with benefit, by Dr. Blanch by desensitization, dietary measures, general routine, the administration of ephedrine *et cetera*, and who had subsequently attended the posture clinic for four months. In each case the parents agreed that the attacks of asthma were becoming less severe and less frequent. Finally there were three children who had acquired the defects of posture which it was the object of the clinic to correct and who had not had any exercises. Two of these children had received courses of desensitizing injections of extracts of house dust and duck feathers respectively, with great improvement; but the third patient had had no treatment.

Miss Carter gave a demonstration of the various exercises she had designed to overcome the faults in posture and to teach the child to empty the chest of air. Her object was to decrease the minimum circumference rather than to increase the maximum; progressive measurements of the vital capacity had shown great increases during the four months in which the children had been doing the exercises.

Intracranial Lesions.

DR. ROBERT SOUTHBY presented a group of patients as a follow-up series to demonstrate the after-results of a variety of intracranial lesions in children. Three of the children had suffered from cerebro-spinal meningitis. One, a male infant, aged twelve months, had had this disease at the age of six months. Meningococci had been isolated in culture from the cerebro-spinal fluid and the infant had been treated by intramuscular injections of meningococcal antiserum (Parke, Davis and Company) with satisfactory results. Although Dr. Southby thought that he could not yet say that the child was quite safe from sequelæ, the child appeared to be in perfect health. A boy, aged eight years, had had cerebro-spinal meningitis one year earlier. Typical organisms had been grown from the fluid and he had been treated with meningococcal antiserum given intrathecally, cisternally, intravenously and intramuscularly. At the time he had responded quite satisfactorily. He had been kept away from school since his illness and latterly had complained of headaches and impairment of vision. His mother stated that he was unable to concentrate normally and that he had changed in disposition and had become "nervy" and emotional. Dr. Southby thought that these distressing sequelæ often presaged trouble later in life. The third patient was a girl, aged five years, who, two years earlier, had suffered from an acute feverish illness with meningismus, which was thought to be anterior poliomyelitis. Human immune serum was administered intravenously and intramuscularly with an apparently good response within forty-eight hours. Two or three days later, however, the temperature rose again and the meningismus increased without the appearance of any paresis or paralysis. The condition was then regarded as an atypical meningococcal infection, and meningococcal antiserum was administered. Convalescence was uneventful and the child appeared to be quite well; but she became subject to occasional nervous storms, in which she became uncontrollably excited for a few hours at a time. Dr. Southby remarked that on occasions he had seen children with similar histories return some years later with a hydrocephalic condition, evidently a late complication of a posterior basal meningitis.

Another group of children presented by Dr. Southby showed the sequelæ of prenatal conditions and birth hæmorrhages. A little boy, aged three years, had had an intracranial birth hæmorrhage of comparatively mild degree. Slight mental and physical retardation were observable and there was still some ptosis of the left upper eyelid. Dr. Southby considered that this boy would be educable and could be trained for manual work. A girl, aged twelve years, was a spastic diplegic with gross mental retardation amounting to imbecility and permanent invalidity. Her condition had not been improved appreciably after sympathetic ramisection some years earlier.

Microcephaly.

Dr. Southby's next patient was a boy, aged four years, who exemplified the gross physical retardation and mental impairment associated with microcephaly. There had not been any measurable increase in the circumference of this child's head for three and a half years. A female baby, aged eighteen months, with definite microcephaly, also had some spasticity of the lower limbs and fleeting nystagmoid movements of both eyes, and was subject to epileptiform attacks.

Syphilitic Hemiplegia.

Dr. Southby also showed a boy, aged nine years, with a typical hemiplegic gait of four years' duration. The condition had supervened rather suddenly, without any premonitory illness. The face had recovered almost completely; but the right arm and leg were still spastic and wasted. Dr. Southby expressed the opinion that such a lesion in a child was almost invariably syphilitic in origin. The serum of this child still reacted strongly to the Wassermann test in spite of treatment for four years. In such cases the prognosis was generally poor, because the initial extensive damage to the brain of a growing child was never repaired. It frequently happened with such nervous system manifestations of latent congenital syphilis that the other systems escaped; in this child there were no other visceral or skeletal clinical manifestations.

Fractures Round the Elbow Joint.

DR. K. HARDY arranged a demonstration to illustrate the types of fractures encountered around the elbow joint in childhood, the treatment adopted, and the results obtained. He showed six children, the first of which was a boy, aged seven years, who had fallen on his elbow and sustained a supracondylar fracture of the humerus. The skiagram showed the typical deformities of flexion, posterior and upward displacement and varus position of the lower fragment. A good functional result had been obtained after reduction under general anæsthesia and the application of a non-padded plaster cast with continual extension on an abduction frame for fourteen days and retention of the plaster for six weeks. Another boy of the same age had sustained a similar fracture by falling on the outstretched hand; by similar treatment and plaster for seven weeks an equally satisfactory result had been achieved. A boy, aged six years, had fallen over a skipping rope on the outstretched hand, with supracondylar fracture of the humerus and valgus deformity of the lower fragment. Reduction under general anæsthesia had been incomplete and he was treated in a cuff and collar sling. After three weeks it was noticed that there was an ulnar nerve paresis, with muscular wasting; this was decreasing by the help of massage treatment and electrical stimulation. A girl, aged three years and three months, had fallen from a swing on her outstretched hand, and

the skiagram showed that the medial epicondyle was displaced. She had been treated in a non-padded plaster cast; but after four months there was still a limitation of extension. Another girl, aged eleven and a half years, with a similar injury, had been treated from ten days after the injury in a non-padded plaster cast for three weeks. Five months later she still had limitation of extension. A boy, aged three years and eight months, had fallen and injured the elbow; a skiagram showed a fracture through the capitellum of the humerus, with lateral displacement and rotation. Considerable improvement in the position of the fragments was obtained under general anæsthesia, and the arm was put in a cuff and collar sling. In seven weeks' time he was able to move the arm through an angle of 30° at the elbow, and in ten weeks there was slight limitation of extension only.

Dr. Hardy pointed out that in the majority of the cases non-padded plaster casts had been used, with good functional results; the cases in which the medial epicondyle was separated, however, were not so satisfactory, and, as this type of fracture involved the elbow joint, the question of the removal of the displaced epicondyle had to be considered. Dr. Hardy stated that though operation had been performed in all such cases reported in the literature, the boy with the fractured capitellum had been treated conservatively, with a good functional result, and two similar cases in the same clinic, in which it had been possible to reduce the fragments under general anæsthesia, had been treated satisfactorily without operation.

Dr. Hardy also demonstrated a model to illustrate Böhler's theory that pronation of the forearm was the position of relaxation of the flexor-pronator group of muscles at the elbow joint and that therefore all supracondylar fractures should be treated in full pronation of the forearm. At times it might be observed that pronation of the forearm alone would reduce the varus deformity of the lower fragment. Böhler had pointed out that it was the tension of the flexor-pronator group of muscles that produced the varus deformity of the lower fragment.

Radiography.

DR. K. R. SPEEDING showed a number of X ray films illustrating various pathological conditions of childhood, including Ollier's disease (multiple enchondromata), spinal tuberculosis, compression fracture of a vertebral body, Köhler's disease of the tarsal scaphoid, and osteogenic sarcoma.

In the films of a patient with scurvy the progressive absorption of the subperiosteal effusions could be demonstrated and the persistence of the "ground glass" appearance of the epiphyses surrounded by the Wimberger's rings was shown clearly.

The radiographic appearances of a wrist deformity following injury were contrasted with those of the Madelung type. The absence of bilateral distribution, of wide separation of the radius and ulna, and of upward and inward sloping of the joint surface, distinguished the traumatic from the congenital variety.

Dr. Speeding showed a series of films of a fracture of the lower end of the humerus, in which, during the course, *myositis ossificans* had appeared and subsided and a good functional result had been obtained, although severe deformity persisted after a period of fourteen months.

Dr. Speeding also demonstrated the changes of bone dystrophy in the films of a patient who had since died of chronic nephritis. At the autopsy, in addition to the renal rickets, small pale kidneys had been observed; these were both hydronephrotic as a result of valvular obstruction in the urethra.

Pylorospasm.

DR. H. BOYD GRAHAM showed a series of charts and case histories of babies with pylorospasm, selected to illustrate that this condition at times simulated hypertrophic pyloric stenosis when explosive vomiting occurred and recurred soon after birth, and at other times resembled dyspepsia when failure to thrive and habitual vomiting, with or without pronounced attacks of abdominal colic, were prominent features. Two severe attacks of pylorospasm of great severity occurred in a male breast-fed baby at the age of six weeks and at two months, causing a loss of 0·9 kilogram (two pounds) in weight on the first occasion and of nearly 0·68 kilogram (one and a half pounds) on the second. Operation was seriously considered when the second spasm placed the baby's life in jeopardy; but the spasm yielded to medical treatment and the baby made a rapid and uneventful recovery. In another instance a male infant had commenced projectile vomiting almost from birth; antispasmodic treatment gave prompt relief. One male infant had explosive vomiting from birth, but gained weight slowly; further features in differentiation from hypertrophic pyloric stenosis were the intermittent nature of the attacks of vomiting and the absence of constipation. Dr. Graham said that this history was noteworthy on account of the absence throughout of any suggestion of colic, and by frequent references to the presence of brown mucus in the vomitus from the first week and at intervals till the baby was over fourteen months old. The early appearance and persistence of this mucus raised the possibility of the presence of duodenal ulcer.

In another case a male breast-fed baby had severe pylorospasm contemporaneously with the occurrence of acute *otitis media* and the extension of infection through the Glaserian fissure; the pylorospasm subsided gradually and had ceased by the time the suppuration had cleared up.

A male infant, the first baby of a nervous, anxious mother, suffered from habitual vomiting almost from birth; but the vomiting did not become projectile until the baby was given artificial feeding and was over three months old. The taking of food seemed to cause colic and threatened vomiting from the third week. Refeeding and alkaline treatment seemed to Dr. Graham to be important features in the successful management of this case.

An example of pylorospasm with pronounced abdominal colic was also included in this series of case histories.

Dr. Graham briefly discussed the clinical features and expressed the opinion that early diagnosis could frequently be made from the colic and vomiting; there was thus a variation from the text-book description of these babies as artificially-fed babies who contracted pylorospasm at the age of three months. It was apparent that the underlying condition was congenital and every effort should be made to maintain breast feeding, and atropine solution and sedatives should be used as early as possible. Dr. Graham discussed the work of Rogatz on the peristolic function of the stomach and the rationale of the Sauer treatment with thickened feedings. In conclusion he stated that he had been disappointed with opaque meal radiography in the differential diagnosis, and with gastric lavage in the treatment; but he advocated examination under general anæsthesia for the presence of a hypertrophic pylorus in the investigation of a doubtful case, and careful recording of the quantities of suitably balanced food retained by the baby, with refeeding to make up any deficiency in the daily requirement, as the important feature in the management.

Tubal Dilatations and Strictures.

DR. IAN J. WOOD, DR. E. E. PRICE and DR. C. H. FITTS showed a large series of patients to illustrate some medical and surgical aspects of dilatations and strictures of certain of the body tubes.

DR. REGINALD WEBSTER showed a number of pathological specimens, which formed a complementary demonstration.

The first patient was a female baby, who had come under the observation of Dr. Ian Wood at the age of three months. She had been jaundiced from birth and had passed white stools and dark urine. On inspection it was seen that she was greenish-yellow, her weight was only 2·5 kilograms (five pounds ten ounces), and the stools contained an exceedingly high proportion of neutral and split fats. The spleen was palpable and the liver grossly enlarged; but the gall-bladder was not palpable. As several reported cases had proved amenable to surgical treatment, laparotomy under "Novocain" infiltration was undertaken.

This revealed the presence of fibrous remnants only of the gall-bladder and ducts. Three months had elapsed since the operation; the child had remained well and her weight had reached 3·8 kilograms (eight pounds six ounces). She was less jaundiced; but bile was still absent from the fæces.

The sialograms of two patients with recurrent subacute parotitis were shown by Dr. Price. The first patient had had symptoms for five years and the changes revealed were early irregular dilatation of the parotid duct and main branches and occasional areas of dilated acini. No obstruction by stricture or calculus existed, and the orifice was somewhat larger than normal. No recurrence of the parotid swelling had taken place since the commencement of treatment. The second patient's condition was of very long duration; symptoms had been present for thirteen years. Clinically the duct was grossly enlarged and the gland crepitant as the result of aspiration from the buccal cavity. In the sialogram the dilated ducts alone could be seen, the gland acini having been entirely replaced by fibrotic material. The patient had not obtained material benefit from treatment.

Dr. Price also showed three patients with apparently non-obstructive hydronephrosis. The first of these was a girl, aged thirteen years and six months, who had been admitted to the hospital with gross renal failure; she had albuminuric retinitis; her systolic blood pressure was 220 and diastolic pressure 180 millimetres of mercury; the blood urea content was 310 milligrammes per 100 cubic centimetres, and the urea concentration in the urine was never over 1%. "Uroselectan" pyelograms showed no shadow from the right kidney and only a faintly marked outline of the left kidney pelvis, which indicated a gross hydronephrosis. By cystoscopic examination it was found that there was no urethral obstruction, that the bladder was of normal size, and that the right ureteric orifice was of normal appearance, but that the left one was pouting and approximately six times as large in diameter as the right one. By retrograde pyelograms it was determined that on the left side there was gross hydronephrosis associated with hydroureter without any tortuosity; the right ureter was of normal size, but the pelvis of the right kidney filled incompletely and presented an amorphous shadow. The urine was sterile and free of pus cells, and there was no tendency to constipation.

The second patient with hydronephrosis was a girl, aged three years and two months, who had been treated eight months earlier for acute pyelitis, which had cleared up very slowly. Although the symptoms disappeared, there remained a few pus cells in the urine. The state of the kidneys was investigated by intravenous pyelography and a retrograde pyelogram and urethrogram were done. It was found that the bladder was normal, but the right ureter bifurcated opposite the sacro-iliac synchondrosis, the lower branch going to a small undilated pelvis for the upper pole of the kidney, the upper branch, which was not dilated, draining a moderately dilated pelvis for the lower pole, with normal calyces. It was established that the left kidney was quite normal, and under treatment the patient's urine had become free of pus cells.

Dr. Price's third patient with hydronephrosis was a boy, aged nine years and six months, who had been investigated because of two attacks of renal colic, each of four hours' duration. It was stated that both red and white blood cells had been found in the urine after the first attack, but none had been found after the second attack. Though he was tender in the right loin for a week, the kidney could not be felt. By cystoscopy and retrograde pyelography it was shown that the bladder and left renal tract were normal; each kidney excreted indigo-carmine in six minutes; the right pelvis held seven cubic centimetres of sodium iodide, and the secondary calyces had lost their normal cup shape and appeared to be clubbed; the ureter was normal. "Uroselectan" given intravenously was excreted normally by the left kidney, but in the right kidney, although it appeared without delay in all the films, it was seen to be held up in the kidney substance, causing the nephrogram to have a dense appearance; in all the films also the pelvis and ureter were poorly filled. It was thought possible that a persistent spasm of the necks of the calyces might have dammed the dye back into the collecting tubules. In the interval of two months that had elapsed the patient had not had any further trouble.

Congenital Defects of Development.

DR. H. DOUGLAS STEPHENS showed a number of children to illustrate various congenital defects of development.

Anomalies of the Lower Part of the Spine.

Dr. Stephens's first patient was an infant girl, aged two and a half years, with gross deformity of the lumbo-sacral vertebræ composed of a confused mass of bony structures, in the centre of which a small semi-fluctuant area was perceptible; over this area, which was not discoloured, there was definite umbilication. In addition, the child had a congenital dislocation of the right hip. She was able to walk with assistance and, though extremely excitable, was not mentally defective. Dr. Stephens commented that the mass could not be distinguished from a true sacro-coccygeal tumour, but was probably a sacral parasite. By way of contrast, a patient was shown upon whom he had operated for true sacro-coccygeal cysts; cysts of enormous size had been removed, but no gross bony deformity had been present.

Dr. Stephens also showed a boy, aged three years and six months, who had a meningo-myelocele in the lumbo-sacral area. No operation had been performed; but the structures over the tumour were firm and afforded excellent protection. He was paralysed in both lower limbs and had very little control over the sphincters; but there was no hydrocephalus, and mentally he was normal.

Dr. Stephens's third patient was a girl, aged twelve years, upon whom he had operated for *spina bifida* when she was three months old. Then she had an extensive meningo-myelocele, partial paralysis and anæsthesia of both legs, patulous anus and a minor degree of hydrocephalus. The hydrocephalus had not increased to any serious extent and she had done quite well at school. Both feet were in a condition of talipes, one in the *equino-varus* position and the other *calcaneo-valgus*. She had had a great deal of trouble through loss of control of micturition and pyobacilluria. At the age of eight years she had suffered extensive trophic ulceration of one foot and had had recurrent necrosis of the bones of the foot later. Her condition was a parlous one, representative of those few patients with the meningo-myelocele type of *spina bifida* who had the misfortune to survive infancy.

Anomalies of the Bladder and Urethra.

Dr. Stephens's next patient was a boy, aged four and a half years, with epispadias, of the complete penile type, which did not involve the arch of the pubes or bladder. No plastic operation had been done. A year previously his urinary control had been very poor; but he had gained control in the meantime and never had nocturnal enuresis and rarely lost control in the day-time.

As an example of a more advanced type of similar deformity, Dr. Stephens showed a male baby, aged three months, with extroversion of the bladder. Radiographs clearly revealed the marked separation of the pubes in contrast to the normal symphysis seen in the previous case.

Another patient, a boy, aged twelve years, was shown by Dr. Stephens, after completion of treatment for perineo-scrotal hypospadias. Three operations had been performed, according to Edmunds's technique, and the final result was completely satisfactory. It was of interest to note that in this case no perineal or suprapubic drainage of the bladder had been instituted.

Hare Lip and Cleft Palate.

Dr. Stephens also showed a number of children to illustrate the various types of hare lip and cleft palate, some before and several after operation.

(To be continued.)

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Buckle, Donald Fergus, M.B., B.S., 1933 (Univ. Melbourne), Mental Hospital, Parramatta.

Denning, Ben, M.B., B.S., 1929 (Univ. Sydney), Curranulla Street, Cronulla.

Drescher, Sheila Marjorie Catherine, M.B., B.S., 1936 (Univ. Sydney), Mater Misericordiæ Hospital, North Sydney.

Hains, George Myer, M.B., 1898, B.S., 1899 (Univ. Melbourne), Box 129 B, G.P.O., Broken Hill.

Hedberg, Eric Alfred, M.B., B.S., 1926 (Univ. Sydney), Sydney Hospital, Sydney.

Moore, Keith Arthur, M.B., B.S., 1926 (Univ. Sydney), Sydney Hospital, Sydney.

Stening, Samuel Edward Lees, M.B., B.S., 1933 (Univ. Sydney), 248, Bondi Road, Bondi.

Symonds, Enid Beth, M.B., B.S., 1926 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.

Terrey, Bruce Corbett, M.B., B.S., 1933 (Univ. Sydney), Coraki.

Ferguson, Eustace William, M.B., B.S., 1926 (Univ. Sydney), Kudimiris, Woonona Avenue, Wahroonga.

The undermentioned has been elected a member of the Tasmanian Branch of the British Medical Association:

Lennon, Vincent Francis Bennett, M.B., B.S., 1930 (Univ. Adelaide), Tarraleah.

Post-Graduate Work.

COURSE IN OPHTHALMOLOGY.

THE Melbourne Permanent Post-Graduate Committee will hold a course in ophthalmology for general practitioners in Melbourne, commencing on Monday, July 6, 1936. The course will extend over two weeks. The minimum number for the course will be 10, the maximum 15. Special attention will be devoted to refraction work. The fee for the course will be £8 8s.

The course will be held mainly at the Eye and Ear Hospital; but special lectures and demonstrations will also be given at the ophthalmological clinics of the Royal Melbourne, Alfred, Saint Vincent's and Prince Henry's Hospitals.

A detailed programme will be published later.

Those wishing to attend the course should advise the Honorary Secretary, Melbourne Permanent Post-Graduate Committee, 61, Collins Street, Melbourne, as soon as possible.

Correspondence.

CLINICAL OBSERVATIONS ON BLOOD PRESSURE.

SIR: I have been intrigued by the correspondence on the above subject, as previously I imagined myself to be the only one who did not know just what the readings meant. Various points discussed seem to leave one still rather confused.

May I put forward one small observation which will, I am sure, not help at all. I am prompted to do so by one sentence in Dr. Kelly's letter in the journal of January 25, antepenultimate paragraph, seventh line. He writes: "Our readings are obtained by stopping the flow." My observation is that this is not so. I have, for some years, used a sphygmomanometer cuff round the arm as a tourniquet when operating on the hand and requiring a bloodless field. I was at first surprised to find that bleeding was free when the band was pumped to a pressure even above that suggested by the systolic reading. Now I ask my anæsthetist to pump to 300 as quickly as possible in husky young adults; below 250 is quite useless. Even in children a reading of 200 to 250 is often required to "stop the flow".

Yours, etc.,

JOHN HOETS.

143, Macquarie Street,
Sydney,
February 1, 1936.

THE MEDICAL BENEVOLENT ASSOCIATION OF NEW SOUTH WALES.

SIR: The Council of the Medical Benevolent Association of New South Wales wishes to convey its thanks to all those who so generously contributed to the Christmas appeal, issued in December.

The total sum collected amounted to £149 9s., of which £95 was immediately distributed to ten deserving members, and the balance was placed to the credit of the general fund.

Yours, etc.,

J. M. GILL,
Honorary Secretary.

135, Macquarie Street,
Sydney,
February 6, 1936.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on February 3, 1936.

The following degrees were conferred:

Bachelor of Medicine (M.B.) and Bachelor of Surgery (B.S.): Albert Edward Kahn and Norman Henry Rose.

The following degrees were conferred *in absentia*:

Bachelor of Medicine (M.B.) and Bachelor of Surgery (B.S.): Darcy Graham Croll and Ronald Richmond Winton.

Bachelor of Medicine (M.B.): Clive Laurence Statham.

The following delegates were nominated to represent the University of Sydney at the Congress of Universities of the British Empire, to be held at Cambridge in July, 1936: The Honourable Mr. Justice Halse Rogers (Deputy Chancellor), the Honourable Sir Daniel Levy, Professor W. J. Dakin, Professor T. G. B. Osborn and Professor S. H. Roberts.

The following appointments were approved: Dr. H. I. Hogbin, M.A., as Lecturer in the Department of Anthropology; Mr. R. W. Greville as Senior House Surgeon, and Mr. C. H. Butler as Junior House Surgeon in the Department of Veterinary Science; Mr. S. J. Hazelwood as Demonstrator in the Department of Organic Chemistry.

A WARNING NOTICE.

THE Medical Secretary of the Victorian Branch of the British Medical Association wishes to warn medical practitioners against giving money to a man posing as the son of a deceased doctor who practised in another State. He attempts to obtain funds for railway fares to enable him to return home. He is about twenty-eight years of age, well educated, and reasonably well dressed.

Books Received.

LIFE'S UNKNOWN RULER: AN EXPOSITION OF THE TEACHING OF GEORG GRODDECK, M.D., by H. M. Taylor, with introduction by M. Powell; 1935. London: The C. W. Daniel Company, Limited. Crown 8vo, pp. 80. Price: 2s. 6d. net.

IDEAL BIRTH: HOW TO GET THE FINEST CHILDREN, by Th. H. Van de Velde, M.D.; 1935. London: William Heinemann (Medical Books) Limited. Demy 8vo, pp. 310. Price: 10s. 6d. net.

WOMEN EAST AND WEST: IMPRESSIONS OF A SEX EXPERT, by M. Hirschfeld; 1935. London: William Heinemann (Medical Books), Limited. Demy 8vo, pp. 339, with illustrations. Price: 12s. 6d. net.

Diary for the Month.

FEB. 22.—Tasmanian Branch, B.M.A.: Annual Meeting.
FEB. 25.—New South Wales Branch, B.M.A.: Medical Politics Committee.
FEB. 26.—Victorian Branch, B.M.A.: Council.
FEB. 27.—South Australian Branch, B.M.A.: Branch.
FEB. 28.—Queensland Branch, B.M.A.: Council.
MAR. 2.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MAR. 3.—Tasmanian Branch, B.M.A.: Council.
MAR. 4.—Victorian Branch, B.M.A.: Branch.
MAR. 4.—Western Australian Branch, B.M.A.: Council.
MAR. 5.—South Australian Branch, B.M.A.: Council.
MAR. 6.—Queensland Branch, B.M.A.: Branch.
MAR. 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MAR. 10.—New South Wales Branch, B.M.A.: Ethics Committee.
MAR. 10.—Tasmanian Branch, B.M.A.: Branch.
MAR. 13.—Queensland Branch, B.M.A.: Council.
MAR. 16.—Federal Council, B.M.A.
MAR. 17.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 18.—Western Australian Branch, B.M.A.: Branch.
MAR. 24.—New South Wales Branch, B.M.A.: Council (quarterly).

Medical Appointments.

Dr. W. A. Pryor has been appointed Quarantine Officer, pursuant to the provisions of the *Quarantine Act*, 1908-1924, and Medical Inspector of Seamen, pursuant to the provisions of Section 123 of the *Navigation Act*, 1912-1935, at Derby, Western Australia.

* * *

Dr. E. Byron has been appointed Quarantine Officer, pursuant to the provisions of the *Quarantine Act*, 1908-1924, and Medical Inspector of Seamen, pursuant to the provisions of Section 123 of the *Navigation Act*, 1912-1935, at Broome, Western Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xvi-xviii.

MOOROOPNA HOSPITAL, MOOROOPNA, VICTORIA: Junior Resident Medical Officer.

NORTH CANTERBURY HOSPITAL BOARD, NEW ZEALAND: Medical Superintendent.

ROYAL HOSPITAL FOR WOMEN, PADDINGTON, NEW SOUTH WALES: Honorary Officers.

SYDNEY HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Officers.

TAROOM HOSPITAL, SOUTH-WESTERN QUEENSLAND: Medical Officer.

THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Registrar.

THE WOMEN'S HOSPITAL, CROWN STREET, SYDNEY, NEW SOUTH WALES: Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Richmond District Hospital, North Queensland. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY Hospital, are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

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